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1854 (p c.)

REPORT

ON THE

CHOLERA IN JAMAICA,

AND ON THE

GENERAL SANITARY CONDITION AND WANTS OF THE ISLAND.

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1853.

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MAP

for tracing the Course

— of —

EPIDEMIC CHOLERA

IN THE NEW WORLD.

CANADA
Ottawa R.
Montreal
QUEBEC
River of St Lawrence
NEW BRUNSWICK
Cape Breton I.
MAINE
NOVA SCOTIA
Halifax
VERMONT
NEW HAMPSHIRE
Lake Huron
Lake Michigan
Kingston
Toronto
Lake Ontario
Buffalo
Rochester
NEW YORK
Albany
Hudson R.
Lake Champlain
MASSACHUSETTS
BOSTON
CONNECTICUT
RHODE ISLAND
Mississippi R.
Missouri R.
Chicago
Detroit
Lake Erie
PENNSYLVANIA
NEW YORK
Newark
PHILADELPHIA
NEW JERSEY
BALTIMORE
WASHINGTON
OHIO
INDIANA
Cincinnati
Louisville
S. LOUIS
St Francisco
KENTUCKY
VIRGINIA
Delaware B.
Chesapeake B.
R. Arkansa
Clarkesville
TENNESSEE
Nashville
Memphis
N. CAROLINA
C. Hetteras
S. CAROLINA
Red R.
MISSISSIPPI
Louisville
Charleston
ALABAMA
GEORGIA
LOUISIANA
Natchez
TEXAS
Mobile
NEW ORLEANS
R. del Norte
FLORIDA
C. Sable
Bermuda
ATLANTIC OCEAN
Gt Bahama
Abaco
New Providence
Eleuthera
BAHAMA ISLANDS
GULF OF MEXICO
Matanzas
HAVANNA
CUBA
I. de Pinos
St Jago
Turks Is
Inague
JAMAICA
Kingston
ST DOMINGO
PORTO RICO
St Thomas
Anguila
S. Cruz
Barbuda
S. Christopher
Antigua
Guadalupe
Dominica
Martinico
S. Lucia
St Vincent
Barbadoes
Grenada
Tobago
TRINIDAD
Margarita
Caracas
Curacao
Pt Gallinas
Ste Martha
Barranquilla
CARTAGENA
G. of Darien
NEW GRENADA
VENEZUELA
R. Orinoco
GUIANA
GEORGE TOWN
Demerara R.
Corentyn R.
Essequibo R.
Paramaribo
Cayenne
BOGOTA
Panama
B. of PANAMA
Chagres
Chiriqui L.
COSTA RICA
G. of Nicoya
Nicaragua
Salinas B.
S. Juan de Nicaragua (Grey Town)
Realejo
Fonseca B.
NICARAGUA
Blewfields
Mosquito Coast
Works of Cape R.
C. Gracias
Gulf of Dulce
Truxillo
Roatan
HONDURAS
B. of Honduras
BELIZE
Belize
Peten L.
R. Tomasinto
YUCATAN
Campeachy
VERA CRUZ
MEXICO
Tehuantepec
Acapulco
GUATIMALA
Guatimala
S. Salvador
Gulf of Tehuantepec
C. Corrientes
S. Blas
Tampico
S. Luis Potosi
PACIFIC OCEAN

JAMAICA.
78°
77° 30'
77°
76° 30'
18° 30'
18°
17° 30'
17°
HANOVER
ST JAMES
TRELAWNEY
ST ANN
ST MARY
PORTLAND
ST THOMAS
in the East
ST GEORGE
METCALFE
ANDREW
ST THOMAS in the Vale
MIDDLESEX
CLARENDON
VERE
ELIZABETH
WESTMORELAND
CORNWALL
MANCHESTER
ST DOROTHY
ST CATHERINE
KINGSTON
PORT ROYAL
ST DAVID
Montego B. & R.
Great R.
Little R.
Littlepot
FALMOUTH
Duncan
Marabona R.
Rio Bueno Tn. & Hr.
Dry Hr.
Flint Pt.
ST ANNS Bay & R.
Roaring R.
Ocho Rios B.
White R. & B.
Orr's Cabrea B.
Galina Pt.
Port Maria
Blowing Pt.
D. Christopher Pt.
Annotto B.
Aqua alta R.
Brunswick
Windsor Castle
Buff B. & R.
Orange B. Pt.
Swift R.
Ship Rock & Hd.
Port Antonio
St George
N.E. End
Manchioneal Hr.
Plantain Garden
Morant
Charles Tn.
Barracks
Maroons
Barrack
Grande
Pickfield
Scots Hall Tn.
Temple Hall
Stony Hill
Fort
Halfway Tree
Greenwich
Kingston Hr.
Port Royal
Gun Vale
Bath
York
Leith Hill
Fort William
Fisherman B.
Port Morant
Morant Tn. & B.
Yallah Hill
Church
Yallah B.
Yallah Pt.
Blue Mountains
NANNY Tn.
MOORE Tn.
Bull B.
Plum P.
Port Royal
Pelican Ks.
Portland Ks.
Portland Pt.
Rocky Pt.
Carlisle
R. Minho or Dry R.
West Harb.
The Alley
Milk R.
Long B.
White Horses
Pedro Bluff
Calabash B.
Gr. Pedro B.
Pedro Plains
Starvegut B.
Paradise Pt.
Black R. & Tn.
Black River B.
Luana Pt.
Parker B.
Savanna La Mar
Caberita R.
John Pt.
Homer Cove
Bluefields & B.
Mores Reef
Crab Pond Pt. & Bay
Orange Grove
Queens Tn.
Ridgeland
Long B.
S. Nigril
N. Nigril
Negril B.
Dolphin Hd.
Cambleton
Green I. Hr.
Davis Cove
Montpelier
Spring
Beverley
Barracks
MAROON Tn.
Barracks 270ft.
Cambridge
Gt. River
Pembrook
Daliston
Eldersley
ACCOMPONG Tn.
Palmer Tn.
Parkinson Tn.
Hector R.
Barracks
Martha Brae
Golden Grove
Hampstead
Pantrepant
Siberia
Barracks
Home Castle
Tripoli
Kilravock
Brown's Tn.
Thickets
Cedar Spring
Goshen
Oxford
The Cross
Sheerness
White Riv.
Whitehall
Tavern
Beechamville
Monéague
Middlesex
Aleppo
Cave R.
Cave R. Barrack
Ruins
Peckham
Kellitts Parsonage
Ludlow
Rose Hall
Barracks
Mexico
Appleton
New Eden
Bog
Cabbage Val.
Mandeville
Porus
Mocha Ms.
Retreat
Guanaboa
Chapleton
Barracks
Liman Ms.
Colbe
Stony Hill
Fort
Spanish Tn. or Santiago
S. Toolies
Parnassus
The Cross
Old Hr. Market
Church
Old Harbour
Bowens Hall
Raymond
Goat I.
Galloon B.
Old Harbour
Canoe Valley
Carpenter Ms.
May Day Ms.
Sa Gue Ms.
Luidleys
Tavern
Lacovia
Elizabeth
Barracks
Eldersley
Accompong Tn.
Hector R.
Palmer Tn.
Parkinson Tn.
Cambridge
Gt. River
Pembrook
Daliston
Queens Tn.
Ridgeland
Long B.
S. Nigril
N. Nigril
Negril B.
Dolphin Hd.
Cambleton
Green I. Hr.
Davis Cove
Montpelier
Spring
Beverley
Barracks
Maroon Tn.
Barracks 270ft.
Golden Grove
Hampstead
Pantrepant
Martha Brae
Montego B. & R.
Spring Garden
Great R.
Little R.
Littlepot
Fort
Montego
Falmouth
Palmouth Hr.
Duncan
Marabona R.
Rio Bueno Tn. & Hr.
Dry Hr.
Flint Pt.
Roaring R.
Ocho Rios B.
White R. & B.
Orr's Cabrea B.
Galina Pt.
Port Maria
Blowing Pt.
D. Christopher Pt.
Annotto B.
Aqua alta R.
Brunswick
Windsor Castle
Buff B. & R.
Orange B. Pt.
Swift R.
Ship Rock & Hd.
Port Antonio
St George
N.E. End
Manchioneal Hr.
Plantain Garden
Morant
Charles Tn.
Barracks
Maroons
Barrack
Grande
Pickfield
Scots Hall Tn.
Temple Hall
Stony Hill
Fort
Halfway Tree
Greenwich
Kingston Hr.
Port Royal
Gun Vale
Bath
York
Leith Hill
Fort William
Fisherman B.
Port Morant
Morant Tn. & B.
Yallah Hill
Church
Yallah B.
Yallah Pt.
Blue Mountains
NANNY Tn.
MOORE Tn.
Bull B.
Plum P.
Port Royal
Pelican Ks.
Portland Ks.
Portland Pt.
Rocky Pt.
Carlisle
R. Minho or Dry R.
West Harb.
The Alley
Milk R.
Long B.
White Horses
Pedro Bluff
Calabash B.
Gr. Pedro B.
Pedro Plains
Starvegut B.
Paradise Pt.
Black R. & Tn.
Black River B.
Luana Pt.
Parker B.
Savanna La Mar
Caberita R.
John Pt.
Homer Cove
Bluefields & B.
Mores Reef
Crab Pond Pt. & Bay
Orange Grove
Queens Tn.
Ridgeland
Long B.
S. Nigril
N. Nigril
Negril B.
Dolphin Hd.
Cambleton
Green I. Hr.
Davis Cove
Montpelier
Spring
Beverley
Barracks
Maroon Tn.
Barracks 270ft.
Cambridge
Gt. River
Pembrook
Daliston
Eldersley
Accompong Tn.
Hector R.
Palmer Tn.
Parkinson Tn

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MAP of the ENVIRONS AND HARBOUR OF KINGSTON in JAMAICA

ST THOMAS IN THE VALE

ST GEORGE

METCALFE

CLARENDON

SURREY

PORT ROYAL

MIDDLESEX

ST CATHERINE

ST ANDREWS

ST DAVID

R. Cobre

Liguanea Mts

Catharines Hill 3100 ft

Blue Mountain Range

New Castle Barrack 3800 ft

Middletown

Stony Hill Barracks 1300 ft

Constant Spring

Caymanas

SPANISH TOWN

Ferry Lagoon & Morass

Botanic Gardens 1500 ft

Crawle Pen

Farm Pen

Marshy Ground

Half-way Tree

Papine

Mona

Hope Road

Dawkins Pen

Salina

Gt Yallaha R.

Passage Fort

Up Park Camp

Cross Roads

HUNT'S BAY

KINGSTON

Hope R.

Greenwich

Fort Augusta

Rock Fort

HARBOUR OF KINGSTON

Salt R.

Port Henderson

Port Royal

The Palisades

Apostle's Battery

BULL BAY

Great Salt Ponds

Cow Bay Pt

J. Arrowsmith, Litho.

REPORT

ON THE

CHOLERA IN JAMAICA, &c.

COPY of a LETTER from Dr. MILROY to the Right Hon. Sir JOHN PAKINGTON, Her Majesty's Principal Secretary of State for the Colonies.

SIR, London, July, 1852.

I HAVE the honour to submit to your attention the following Report on the cholera in Jamaica, and on the sanitary condition and wants of the island. The dreadful violence of the visitation, the misery and loss of life which it occasioned, and the disastrous results to the industrial welfare of the colony which it has left behind, have been unequalled in any other portion of Her Majesty's dominions. It becomes therefore a question of deep importance not only to the physician and philanthropist, but also to the legislator and statesman, independently of those whose material interests are more directly concerned, to determine, if possible, what were the causes which gave rise to such lamentable consequences, with the view of preventing their recurrence either in Jamaica or in any other colony of the British Crown; for what holds true of one will unquestionably be more or less applicable to every other; and when it is considered that new settlements of our countrymen are springing up in various parts of the world, which will, in all probability, follow in many of their social and domestic arrangements the steps of their predecessors, it cannot but be of great moment that the truth be thoroughly ascertained for their guidance and instruction.

Should it appear that the consequences alluded to were inevitable, and beyond the control of human skill, we have only to submit in awe to the judgments of Heaven; but if, on the contrary, it can be shown that by the use of means within our reach the storm may be mitigated if it cannot be averted, surely then it is the duty of all who have any influence whatever over the government, local or imperial, of a land, to see that these are not wilfully overlooked, and that the people are not left to perish from mere neglect.

In carrying out such an inquiry as the present it is necessary to enter into minute details, not upon one subject only, but upon many; a superficial or general review will not suffice. Impressed with this consideration, I devoted myself unremittingly during my residence in Jamaica to become acquainted by personal investigation, as well as by oral and written communications, with every matter connected with the object of my mission. Having had the opportunity of visiting every parish in the island, and of coming in contact and conversing with persons in all conditions of life, the field of my observations and inquiries was at all events abundantly ample. Moreover, the correspondence which I

have kept up with some of the best informed residents since my return to this country has furnished me with fresh evidence upon many points, on which that collected by myself was less complete than I desired. The opinions, therefore, expressed in the report, have not, at least, been inconsiderately adopted.

The contents of the Report are arranged thus: After a brief notice of the course of the cholera in the New World on its first visitation in 1832–3, when Cuba was the only island in the West Indies which was attacked, and of its reappearance in 1849, I have narrated the general progress of the pestilence during successive months in Jamaica, from its outbreak in October 1850 to its cessation in the beginning of the present year. Particular descriptions of the chief towns are then given, with details of the cholera in each. The results among the troops in the island are then noticed, and these are followed by remarks on the influence of elevation on the spread of the disease, on epizootics among the lower animals, &c.

The subject of the Quarantine laws and practice of the island are considered, with recommendations for their complete remodelling.

To this succeeds the consideration of the mortality among the population in ordinary seasons, and of the Registration of births and deaths, evidence being adduced to show that there is going on at all times a large preventible amount of sickness and waste of life among the working classes, more especially in infancy and youth; and that there is consequently much unnecessary destitution and pauperism, while the demand for labour is greatly above the supply.

For the correction of these evils, and the general amelioration of the people, the necessity of an efficient Medical Relief Act, and of a Nuisances Removal and Diseases Prevention Act, is pointed out.

The Appendix contains various documents illustrative of my inquiries and recommendations. Among these is a copy of the letter * which I addressed to Sir Charles Grey in April of last year, and which is printed in the Minutes of the House of Assembly.

REPORT referred to in foregoing Letter.

In the first visitation of cholera, in 1832, in the New World, it has been very generally believed that the earliest cases occurred at Quebec in Lower Canada about the beginning of June in that year. They have been confidently ascribed, by some writers, to direct and traceable importation by vessels from Europe; but this point is far from having been distinctly made out, and Dr. Douglas, the medical officer of the quarantine station at Grosse Isle, informed me that he has serious doubts upon its accuracy. From Quebec the pestilence upon that occasion appeared to proceed in a westerly direction, along the course of the St. Lawrence, to Montreal, and thence to Upper Canada and the north-western states of the American Union, and nearly about the same time in a southerly direction to New York, Philadelphia, and other principal cities of the United States, till it reached New Orleans in the extreme south.

It is a curious fact, that it was towards the close of this year, 1832, that the only fatal case of apparently malignant cholera which is recorded to have occurred in Jamaica, prior to the recent epidemic invasion, took place. Several of the most experienced practitioners in the island have occasionally in other

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* Vide Appendix A.

years met with cases where the symptoms very nearly resembled those of the Asiatic disease, and which during an epidemic year would unquestionably have been regarded as such; but in almost every instance the patient rallied from the extreme exhaustion, and recovered. I have given in the Appendix * a brief notice of the fatal case at Port Royal, in order that the medical reader may form his own opinion as to its true nature.

In the beginning of 1833 the pestilence made its appearance, notwithstanding all the precautions of a most rigorous quarantine, at Havanna and the neighbouring seaport town of Matanzas on the north side of Cuba. For many months it continued to prevail with great violence in that island. The mortality in Havanna alone has been estimated at 10,000, or about a tenth of its then population. In many of the rural districts, the deaths among the blacks averaged from a fourth to a half of their whole number.

In the course of the summer, Tampico, Campeachy, Vera Cruz, and other places on the shores of the Mexican Gulf, suffered very severely; and the disease extended inland from the coast until it reached the city of Mexico, many thousand feet above the level of the sea. At Tampico, the ravages were awful; three out of little more than six thousand people perished.

Throughout the whole of this year, most of the southern and south-western states of America were under the influence of the epidemic.

In 1834 there appeared to be in different parts in the New World, as in several countries in Europe, a fresh outbreak of the pestilence, after a lengthened lull and seeming disappearance of the morbific agency. Quebec and Montreal were again invaded, and again the epidemic spread along the direction of the river into Upper Canada. Halifax and other places in Nova Scotia were also visited for the first time this year, while the states of New York, New Jersey, Pennsylvania, Maryland, Georgia, &c., in short the greater part of the American Union, again suffered more or less severely. The disease still lingered in Cuba. Its chief force there, during this year, seems to have been in the town of St. Jago, on the south side of the island.

In 1835 cases continued to be observed at New Orleans and in various places along the course of the Mississippi and Ohio, and on board boats plying on these rivers; also in some parts of Georgia and South Carolina. There is likewise reason to believe that Texas and Mexico were not free from the epidemic. It still lingered in some parts of Cuba.

In the following year it is known to have existed at the Havannah; and then for the first time the important seaport town of Charleston in South Carolina was attacked by the disease, although it had escaped altogether in previous years, while places not far distant were infected. Sporadic cases continued to take place in various points in the great valley of the Mississippi. After 1836 all traces of the pestilence seem to have disappeared from the North American continent, and also from Cuba, the only island of the West Indies which was attacked in what may be called its first extra-Asiatic campaign.

It may not be unworthy of remark, that it then certainly continued to linger for a much longer period of time, and also to re-appear more frequently, in several parts of the New World, than (to the best of my knowledge) it did in any portion of Europe; for it seems to have existed, with but very short intervals of cessation, somewhere or another in the former, from its commencement in 1833 till nearly the end of 1836. The same thing has been again observed during the recent epidemic. Do not these circumstances indicate that there is in these regions the presence in an especial degree of those very physical conditions, which are favourable to its development and the persistence of its agency?

For the space of about twelve years, nothing was heard of the cholera. It was in December 1848 that the first cases of the second great epidemic visitation occurred about the same time in the harbour of New York and at New Orleans. The circumstances connected with the appearance of the disease in these two places, and of its subsequent career in the United States, have been so accurately given in the instructive Report of Dr. Wynne, published as Appendix C. to the Report on Cholera by the General Board of Health, that it is unnecessary to advert to them here. The course of the epidemic on this occasion appears to have been different from what it was in 1832–3. It now travelled from New

* Vide Appendix B.

Orleans as a starting point in a northerly direction, following, as it so generally does, the tracts of the great rivers, until it spread over every part of the Union. No outbreak took place in the city of New York for five months after its appearance in the harbour, nor was Canada attacked until the middle of 1849. The general impression is that the disease entered Canada from the westward, the upper province having been infected before the lower one. Certain it is that it was not at Quebec or Montreal where the first cases occurred, and therefore that the arrival of shipping at these two ports from any European country had nothing to do with the appearance of the disease.

About the same time that Canada became infected, the epidemic manifested itself in different places in the Mexican Gulf, and also on the Caribbean shores of the South American continent. It appeared in the summer of 1849 at Vera Cruz. Isolated cases had occurred in the vicinity of Baranquilla on the seacoast of New Grenada in June. In July and August it prevailed there as an epidemic. "It was supposed," writes my correspondent Mr. Bland, to whom I am indebted for some valuable information, "to have been brought "by the steamers from New Orleans to Chagres on the isthmus of Panama, "and thence to Carthagena. It took its course along the coast as far as Santa "Martha, and visited many towns in the province of Carthagena, and followed "the line of the river Magdalena up to the city of Bogota, which is 9,000 feet "above the sea, and several hundred miles from the coast. There was a fresh "outbreak in the spring of 1850 at Baranquilla, Carthagena, and Santa Martha. "Before the appearance of the disease in 1849, the weather was hotter and the "atmosphere more than usually heavy and cloudy. During its presence, there "was a great mortality among the monkeys in the woods, and among the dogs "and cows in and about the towns."

I am unable to specify the exact time when Cuba became affected during this epidemic, and I believe that it is not known in what part of the island the disease first manifested itself. It is supposed to have existed for a considerable time in the interior before it appeared at Havannah. The earliest case there was in the last week of March 1850 (nine months therefore later than in the South American ports), in a soldier living in a fort at the head of the harbour, before any one either in the town or among the shipping was attacked. Upon asking Dr. Chaple, one of the medical officers of the military hospital there, whether in his opinion the disease could in any way be traced to importation, he replied that he thought not, as it appeared first in a place quite unconnected with the shipping, and did not burst out in the town for three weeks after it existed among the troops. The mortality on this occasion was comparatively small with that in 1833. Great sanitary and structural improvements had been effected in the interval. There had been of course, as in all Spanish ports, a strict quarantine kept up during the whole time. It was not until August or September that the disease reached the south side of Cuba.

During the summer of this year, 1850, it raged with violence in the city of Mexico, at St. Luis Potosi, Jalapa, Vera Cruz, and also at many parts on the isthmus of Panama. It continued to prevail in the United States, particularly in the southern provinces. The President of the Republic died of it at Washington in July. While it was thus wide spread over the New World, the shores of the Mediterranean were also severely visited. Various parts in Algeria, Tripoli, Tunis, and Egypt suffered frightfully; and in Malta and Cephalonia it prevailed with great force. Nor were the shores of the Baltic exempt, for several districts in Sweden, Denmark, and Pomerania were visited with greater or less severity.

As early as 1849, suspicious cases had been observed in Jamaica. In August of that year, a black soldier of the 2d West India regiment at Port Royal was suddenly attacked at night with the symptoms of malignant cholera; he recovered. Some of the soldiers in the Kingston Barracks, as well as two or three of the inhabitants of the town, were similarly affected about the same time. A case, too, having almost all the characters of a choleraic seizure occurred in a white soldier at the mountain cantonment of Newcastle in October. "In every particular," says Dr. M'Illree, the surgeon of the regiment, "this "case resembled the epidemic disease but in the want of shrinking of the "hands." Although for some time the patient appeared past recovery, he ultimately rallied. He was attacked while on guard.

The occurrence of these cases, taken in connexion with the known fact that the pestilence existed in several of the ports of New Grenada with which the island was in frequent communication by steamers, gave rise to considerable alarm among the inhabitants of Kingston and many believed that it was already among them. Indeed, even for some time previously, there appear to have been grounds for apprehension, as at a meeting of the corporation in July the mayor stated that he had been called upon by the Local Board of Health to urge "the necessity of taking every precaution to guard against the cholera." Strict orders were accordingly issued by the executive to the quarantine officers in the different outports to be doubly vigilant in detaining vessels from any infected or suspected localities, "until they had completed five clear days from their "leaving their last port, and without any sickness having occurred on board." Several vessels, including one or two ships of war, were subjected to this detention at Port Royal. No other precautions were taken, notwithstanding the remonstrances of the medical profession in Kingston, and the warning in the admirable letter* addressed by Dr. Ferguson, the leading physician of the town, to the civic authorities, and published in all the newspapers of the island. It will be seen that Dr. Ferguson was evidently impressed at the time with the very near approach of the visitation.

Among what some may deem the foreshadows in 1849 of the coming pestilence, may be mentioned the general failure in that year of one of the chief esculent roots of the island, the *coco*, which, with the yam, may be regarded as the substitute for the potato in Jamaica.† The roots were described to me as rotting in the ground, and the analogy between the disease of the coco and the potato blight (which, it will be remembered, was a precursor of the cholera in Europe,) was frequently alluded to. An old planter in St. Anne's was in the habit of remarking that, if there was cholera *among the people* in England, they surely had cholera *in the ground* in Jamaica.

That in the following year, 1850, which will ever be disastrously memorable in the annals of the island, there were some well-marked meteorological peculiarities, cannot reasonably be doubted. A large amount of evidence on the subject is in my possession, and it all tends to the same general conclusions. After a very dry spring, the early rains set in as usual in May. In ordinary seasons these last for two or three weeks, and then dry weather follows for some months, when the late or October rains are looked for. But in 1850 rainy weather occurred at frequent intervals throughout the whole summer. It was altogether a very wet season, not so much from occasional immense falls of rain, as from the constant recurrence of showers; and also, which is not common in tropical countries, from their frequently occurring during the night. The heat, too, was more than usually oppressive from July onwards, in consequence of the remarkably calm stagnant state of the atmosphere. The sea-breezes—which are so refreshing within the tropics, setting in about nine or ten o'clock in the morning, and lasting till the afternoon—frequently failed, or were entirely absent for several days in succession. At other times they were irregular as to the direction from which they came. The regular sea-breeze in Jamaica is from the east, being south-east on the south side, and north-east on the north side of the island. Whenever it deviates much from its accustomed quarter, blowing more due north or south, it becomes much less refreshing, and this change is the more remarkable if it veers round at all to the westward. It is then, instead of being the "doctor" or health-bringer, very generally not only uninvigorating but positively unwholesome, bad fevers and other forms of sickness very generally prevailing. One cause unquestionably of this is owing to the circumstance that most of the towns and villages of the island are built to the windward—in other words, eastward—of any swamp or marshy ground in their neighbourhood, with the view, of course, of avoiding as much as possible the malaria from such localities. If the wind, therefore, becomes at all westerly, it necessarily brings along with it the poisonous atmosphere.

Now the change in question was continually occurring during the summer and autumn of 1850. Indeed every thing seemed to prognosticate a very sickly

* Vide Appendix C.

† In 1847 there had been a partial scarcity of ground provisions, and a subsequent tendency, as in Europe during that year, to scurvy in a mild form among the people.

fall, and many of the resident medical men in different parts of the country confidently predicted the prevalence of bad forms of fever, dysentery, &c. The negroes too, who, like all children of nature, are great observers of the weather, foretold the same thing:—"Weather fine for crops," they said, "and plenty of sickness." For twelve or fifteen years at least, there had not been such an abundant crop of canes on the ground, and the planters were confidently looking for a most productive harvest.

The peculiarities adverted to were experienced, not in one part only of the island, but over its entire length and breadth;—on the coast and in the interior; on high mountains, which are usually cool and healthy, as well as in the plains, where oppressive sickly weather is more common. I shall here select but one or two descriptions from residents in different localities. Frequent allusions will be made to the subject in the subsequent narrative.

Deputy Inspector of Hospitals, Dr. Maclean, states in his report to the Army Medical Board that "for several weeks, nay months, before the outbreak of "cholera, the state of the weather was extremely unsettled, with an unusual "continuance of rainy days, and an almost daily succession of thunder and "lightning, more especially observable in the mountain districts of St. Andrew "and Port Royal, although other localities and the lowlands were not exempt "from similar atmospheric phenomena. The oldest inhabitant of Jamaica has "no recollection, during his residence in the island, of such awful peals of "thunder, accompanied by such a deluge of rain, as took place on the night "of the 8th October 1850."

It was everywhere remarked that the thunder storms, although so frequent, seemed to have no effect in clearing or refreshing the air.

Dr. M'Illree favoured me with the following extract from his report to the Army Medical Board. He writes from Newcastle Barracks:—"The weather "at the commencement of the year was very dry. For the first four months "there was only 8½ inches of rain, a quantity unusually small at Newcastle, "and the proportion was even less in the lowlands. After this there was "much heat, more particularly in June, July, and August; at a later period the "atmosphere was very oppressive, and surcharged with electricity. For several "weeks previous to the appearance of cholera it was exceedingly warm, still, "and disagreeable, even at Newcastle, which is nearly 4,000 feet above the "level of the sea. This was experienced in an increased degree over a great "portion of the island which I passed through between the 7th and 30th of "September on the north side of the island. At Falmouth the houses were "infested with swarms of flies and moschitoes, and these insects died in such "quantities that they were swept off the tables in handfuls. It is difficult to "assign any sufficient cause for this remarkable circumstance; but doubtless "it depended on some peculiar condition of the atmosphere." After describing the terrific thunderstorm which ushered in the appearance of the pestilence in Kingston, Dr. M. says:—"It may be further remarked, that the appearance "of the atmosphere after this period, and during the prevalence of the cholera, "was more gloomy in the lowlands than I ever remember it; and this state "of the weather extended to the mountain districts during the latter part "of October, in November, and part of December; drizzling rain, cold, "chilly, sunless days, bleak misty weather, with irregular winds and calms, "prevailed to a greater or less extent all the time. Many of the above "remarks connected with the state of the weather preceding and during the "prevalence of the cholera are mentioned more as differing in degree than in "a total deviation from what is generally observed. The weather in September, "October, and November is always more oppressive and still than at any other "period of the year, and the atmospheric changes during these months are "more sudden and variable, calms and irregular winds are more frequent, and "serious illnesses are more common than at other periods. However, there is "no doubt but that the general state of the weather during the late epidemic "was more than usually unfavourable, and must have acted as a powerful "accessory in increasing the force and malignancy of a pestilential disease like "cholera, independently of what may have been the primary or efficient cause "of its development."

The exceeding stagnancy of the atmosphere, even at great elevations, was the most remarkable feature. Mr. Taylor of Good Hope, a coffee property in the Port Royal mountains, 3,000 feet high, remarked to me that for several

weeks not a breath of air was to be felt, nor a leaf seen to move, even at that elevation. There was also a good deal of blight at the same time on the coffee plants.

On the north or opposite side of the island, similar meteorological phenomena were observed. The Honourable Mr. Roberts, chairman of quarter sessions, had entered in his diary the following remarks on the subject :—

" From May until August the air during the day was unusually still ; little " or sometimes no sea-breeze for several days. The horizon generally skirted " in the evening with heavy clouds and dull electric light. During this still- " ness of the atmosphere, the pools of the coral reefs along the coast remained " stagnant, and emitted offensive smells from decayed shell fish, sea weed, &c. " The autumnal rains set in earlier than usual, about 20th August, and conti- " nued at intervals until the close of the year. After the rains commenced, " the sea-breeze frequently blowing at and during the night. Rain also fre- " quently fell during the nights, which is here uncommon. Instead of the " usual land-wind, cold airs from the west and south continually blowing in the " morning. Frequent and long-continued *westerly* winds during the day in " September. The sea-breezes continued irregular until the close of the year. " The heat was excessive during July and August ; the thermometer fre- " quently at 92° in the shade, and in a locality where the summer range seldom " exceeds 82°. The heat was more oppressive by the stillness of the atmo- " sphere." Mr. Roberts alludes to the swarms of house flies and mosquitoes frequently found dead in great numbers from no apparent cause.

The rapidity and rankness of vegetation upon the setting in of the May rains, after the great drought in the earlier part of the year, were such as to excite the notice of old residents. Guinea grass grew five or six feet in as many weeks ; it was then in many districts attacked with blight, and speedily changed from a lively green to a reddish brown colour.

Nowhere were the peculiarities of the season more remarkable, nor, fortunately, more accurately recorded than at Port Royal. Deputy Inspector Dr. Wingate Johnston, Mr. Watson, Surgeon of the Naval Hospital, and Dr. Walshe of the Royal Artillery, in their several reports describe the weather to have been unusually rainy and oppressively hot, with a low range of the thermometer. Besides these atmospheric conditions, there was a very unusual rise in the tides observed there and at other parts of the coast for many weeks.

The ordinary rise of the tides in Jamaica does not exceed 12 or 18 inches ; then it was at least double that amount. The Reverend Mr. Hall, the Rector of Port Royal, informed me that the sandy beach of the small " key " or islet opposite his windows was under water for some months before the outbreak of the cholera in the town, and that it did not become visible as usual until the disease had nearly subsided. From this uncommon circumstance, taken in connexion with the close stagnant condition of the air, and the irregularity of the accustomed sea-breeze, many of the residents were apprehensive of an earthquake. Commodore Bennett, dreading an approaching hurricane (August, September, and October are regarded as the hurricane months in Jamaica), had kept the ships of war in the harbour double-anchored, and had taken extra precautions to secure the buildings in the dockyard. Every one, without exception, seems to have anticipated the advent of some disastrous occurrence or another. There was in Kingston too a general undefined dread of an impending calamity.

It appears from the reports of the military medical officers (for the opportunity of perusing which I am indebted to the courtesy of Dr. Smith, Superintendant of the Army Medical Board), that the summer season of 1850 in most of the other British West India islands was somewhat similar to that experienced in Jamaica. Dr. Stewart, the Medical Inspector of the Windward and Leeward Island command, remarks of the quarter from 1st July to 30th September that the weather had been much alike at all the islands ; the drought of the preceding quarter was succeeded by a high electric state of the atmosphere, loud peals of thunder and lightning, and heavy falls of rain, which were greatest at St. Lucia, 38½ inches, and least at Antigua, 18 inches. Light southerly and *westerly* winds had been much more frequent than usual, and calms, giving to the system a feeling of great oppression and overpowering heat not indicated by the thermometer.

Staff Surgeon Williams, in his report from Barbadoes during this quarter, alludes to the rains continuing much longer than usual. "In former seasons, "the fall of rain has been, I believe, generally found to lessen very consider- "ably, if not wholly to cease, by the month of September; but to judge from "present appearances (Oct. 13th), there is no reason to expect an immediate "cessation of the wet season, as the fall is now quite as frequent and abundant "as at any period of the last quarter. During September there was a great "deal of lightning and thunder, and there was a considerable prevalence of "southerly winds, much more than is, I think, usual."

Before proceeding to relate the history of the visitation of epidemic cholera in Jamaica, it will be useful to notice, first, some very interesting circumstances in the health of the troops in the other British West India islands, and more particularly in Barbadoes, where several fatal cases of apparently the malignant disease occurred prior to the appearance of the pestilence in Jamaica. The facts are of course derived from the official reports of the medical officers.

During the quarter from the beginning of July to the end of September 1850, there was a greater amount than usual of febrile and bowel complaints among not only the troops, but also the civil population, in most of the Windward and Leeward Islands. Although these disorders were generally of a slight description, the peculiarity was observed everywhere, that an extraordinary "degree "of debility was left which made convalescence tedious and protracted, with a "predisposition to relapse, such as the mild character of the previous symptoms "would not have led one to expect." That the quarter was certainly a sickly one, appears from the fact that, whereas in the corresponding quarter of 1849 the admissions into the military hospitals were 30 per cent. of the well, and the deaths amounted to $1\frac{1}{5}$ of the sick, the former were now 42 per cent., and the latter were $1\frac{3}{5}$. Of the deaths, three if not four were produced by attacks of malignant cholera; two in Barbadoes, and one in St. Vincent. The circumstances of the cases are these:—On the 8th of July, a soldier of the 66th regiment, of intemperate habits, was admitted from the lower floor of the iron barracks (Barbadoes) in a state of collapse, and with all the characteristic symptoms of the disease, including suppression of urine, &c. He died in 12 hours. The post-mortem appearances, including the contracted urinary bladder and tarry condition of the blood, confirmed the diagnosis which had been formed during life. No other case occurred in this regiment. Two months subsequently, however, two well-marked cases, one of which proved fatal, took place in the 34th regiment. The first was on the 12th of September; the other on the 19th. In the former, the patient had been affected with diarrhœa for two or three weeks before the attack, which he survived only eleven or twelve hours. The symptoms during life and the appearances on dissection could leave no doubt as to the nature of the disease. In the second case the symptoms were exactly alike, only less severe. No urine was voided for 36 hours. The convalescence was extremely slow. Besides these two cases, one of four fatal fever cases recorded during this quarter terminated by a choleraic seizure. Prior, however, to the occurrence of any of these attacks of malignant cholera in the 34th, a fatal case of what is set down in the returns as "convulsions" took place among the troops at Barbadoes at the beginning of August. The case is a singular one; the chief symptoms being violent spasms of the abdominal muscles, followed by extreme exhaustion. He was brought to the hospital at midnight. At that time, there had been no vomiting or purging; nor did these symptoms supervene until shortly before death on the following day. No peculiar appearances were found on dissection.*

It is worthy of notice that, besides numerous cases of diarrhœa during this quarter in the 34th and 66th regiments, there were a good many of severe colic, and several of acute dysentery, but that all the black troops remained nearly exempt. There seems, therefore, to have been something peculiar in the constitution of the white troops, rendering them in an especial degree liable to

* Cases of this description used to be of frequent occurrence in some parts of the East Indies. They have been described under the name of spasmodic affections by Girdlestone, Clark, and other writers of the last century, as bearing a close analogy to the cholera. "The spasms," says Dr. Clark (Obs. on Dis. in Long Voyages to Hot Countries, 1792), "indeed differ from those which accompany "the cholera, in not being attended with purging. But if we conceive a patient attacked with "cholera to be seized at the same time with strong spasmodic contractions of the muscles of the "abdomen, and of the intestines themselves, which is actually the case in the distemper under con- "sideration, constipation must be in general the consequence."

severe bowel complaints. No cause could be assigned for the isolated attacks of the pestilential cholera, which, says Staff Surgeon Williams, "exhibited "all the characteristics of the disease, as it appeared in various parts of Great "Britain where I have witnessed it in all its severity."

The solitary case among the troops at St. Vincent occurred on the 4th of September. It proved fatal in twelve hours.

During the following quarter, from October to the end of the year, the 34th regiment at Barbadoes continued to suffer not only from mild remittent fever, the only peculiarity of which was the disproportionate degree of consecutive prostration, but also from bowel disorders. Ten cases of cholera occurred, but only one proved fatal in a man who had been affected with diarrhœa for a considerable time previously. On the evening of the 25th October he was seized with cramp, vomitings, and purging, and died on the following day, with all the characteristic features of the malignant disease. Secondary fever set in in some of the other cases; but eventually they all did well, although the convalescence was usually very tedious. "The cases came in succession, not from any parti- "cular company, barrack-room, or class of men; the admissions were from all "the companies. One was from the Provost, where the man had been three "weeks in confinement. In another, the patient was taken ill on guard. No "cause could be assigned. All had the usual premonitory symptoms of bowel "complaint before being taken ill. Diarrhœa was not prevalent at the time. "The symptoms were all those of severe spasmodic cholera; the only apparent "difference from the Asiatic form being that the spasms were not so violent." Staff Surgeon Linton, who treated the case, regarded it as one of the malignant disease. The last admission was on the 26th December. Besides these cases in the 34th regiment, there was one in the Royal Artillery at Barbadoes; the patient recovered.

Two cases of "cholera morbus" occurred during this quarter at Dominica, but no particulars are given. It is believed that both recovered. The case at St. Vincent, in last quarter, had not been followed by any other. A sudden outbreak of mild continued fever had appeared among the garrison there, but only one death ensued.

Dr. Stewart, in his quarterly report of the Windward and Leeward Islands Command from January to April 1851, alludes to "some cases of common cholera at most of the islands, a few of them proving fatal,"—among the civil population, it may be presumed, as the only case among the troops was one at Tobago, in an African soldier who had just arrived from Demerara. He was admitted almost in a state of collapse, but recovered. There was no case at Barbadoes this quarter.

To return to Jamaica.

As already mentioned, the resident medical men had anticipated from the meteorological peculiarities of the season that the autumnal months would prove very sickly. During September, there was a great deal of severe bowel complaints in different parts of the island. Dr. Chamberlaine, the health officer of Kingston harbour, reports that diarrhœa and dysentery were very prevalent in the district of the town of which he has charge. Dr. Macnab, another experienced practitioner there, states, in a communication to me, "that in his prac- "tice he had met with a greater amount and a severer type of bowel complaints "before cholera appeared than in former years." Dr. Stevens of Falmouth made a similar remark, and his attention was the more drawn to the fact of the great prevalence of these disorders as he had just returned to the island after a few months absence. Assistant Staff Surgeon Armstrong mentions that the troops in the barracks at Falmouth had been much affected with diarrhœa, and he alludes to the discharges in some cases resembling the discharges in cholera. In the neighbourhood of Annotto Bay also, severe intestinal affections and fevers with enteric hæmorrhage were unusually common during the month of September and beginning of October.

In other parts of the island, including Port Royal, bowel disorders appear not to have been more frequent than in other years during the autumnal months, when there is always, of course, a greater tendency to them than at other seasons.

On the 26th of September, a death occurred on the north side of the island in the parish of St. James, under circumstances which seem to indicate that it was from an attack of pestilential cholera. The evidence is unfortunately imperfect, as the case was not seen by any medical man, even after death. The facts are

these, as communicated to me by the Honourable Mr. Roberts, whose residence at Lilliput is close to the spot where it occurred, and who, after having carefully inquired into the history of the attack, was so strongly impressed with the idea of its malignant nature that he thought it right that an inquest should be held upon the body. A negro woman of the name of Wilson, living in a hut on the sea shore about six miles distant from Falmouth, had on the night of the 25th been nursing a poor neighbour ill with a bowel complaint, and returned next morning home much fatigued from having had no food for a great many hours. Very soon afterwards she felt sick, became very cold, and complained of pain in the bowels, which were relaxed. Two or three hours later she was worse; she was frequently vomited and purged, the discharges being colourless, and attended with severe griping; the arms and legs were cold and knotted, and she was always moaning from the pain. These symptoms appear to have continued till the evening, when she fell asleep, and revived a little. About 11 p.m. she was breathing very hard, according to her husband's statement; at 2 a.m. she was found dead. There was no reason to suspect that the attack had resulted from any article of food she had eaten. She had been much exposed to the chilly air on the preceding night. There were several people in the neighbourhood suffering with bowel complaints at the time, but perhaps not more than in other years at that season. The hut was, as usual with negro dwellings, small and filthy. The family consisted of the woman, her husband, and three children. The latter were suffering from fever at the time; but neither they nor the father had any choleraic symptoms either then or for some weeks afterwards. The first recognized case of cholera in the neighbourhood did not occur until the 8th of November.

Whatever opinion, therefore, may be formed as to the nature of Wilson's attack, the locality cannot be regarded as the focus from which the pestilence appeared to spread. This was unquestionably from the town of Port Royal, where the earliest case did not occur for ten days afterwards, viz. on the 7th of October. Other cases rapidly followed, and, as was anticipated by all who knew the state of the place and its inhabitants, a frightful mortality ensued. Within three weeks a fourth of the entire population had perished.

From the date of the earliest case of the epidemic in Port Royal, there was a remarkable prevalence of diarrhœa and other signs of intestinal disturbance in Kingston. Scarcely a person remained exempt.

The first fatal case of the epidemic there occurred on the night of the 9th, another on the following day in the same neighbourhood, and in less than a week the disease had broken out in numerous districts of the city. There was the utmost alarm among all classes, for every one was aware that the town was in a most filthy and unwholesome condition, notwithstanding the repeated warnings of the resident medical men, and the existence of various local ordinances for the correction of nuisances and the protection of the public health; but these had been long openly and systematically violated by the mass of the people, and their enforcement wilfully neglected by the authorities. In the present emergency, the common council met, and passed a number of resolutions for the cleansing of the streets, establishing hospitals for the cholera patients, &c.; but no efficient measures were taken to ensure their execution.

The influence of the epidemic rapidly extended itself in a westerly direction to Spanish Town. Cases of choleraic diarrhœa had begun to appear there within two or three days after the first fatal case in Kingston, but it was not for nearly a week afterwards that any death took place. Meanwhile, however, there had been several victims in some intermediate localities, as at Passage Fort, a filthy fishing village on the west side of Kingston Harbour, and at the Farm-pen and other properties in the malarious plains of Liguanea. In the first-mentioned place, the earliest case occurred on the 14th, in a poor black boatman, who had been to Kingston that morning, and was attacked in his boat; he died in the course of a few hours. The next case was on the following day, at an adjoining property, in a boy, who had had no communication with the former patient. At the negro village on Farm-pen, an old woman, who had never left the grounds, was seized as early as the 12th. The disease rapidly spread, carrying destruction with it. One third of the people, between eighty and ninety in number, were swept away in less than a fortnight, and all the rest, who did not fly from the spot, were more or less severely affected. The huts, situated on the banks of the river Cobre, are of the most miserable description,

buried in rank vegetation, and environed with filth. Most of those who fled to the neigbouring hills escaped with their lives. Very few of the developed cases recovered; not a seventh of the whole. They were not seen by any medical man, although within six miles of Kingston on the one side and of Spanish Town on the other; such was the dearth of medical aid. The disease often proved fatal in three or four hours, with little vomiting or purging. A wake was held over one of the earliest victims under an open shed. Of those who attended, 19 were attacked that night; and eleven were corpses by the following morning. The cessation of the pestilence was as sudden as its invasion; "it seemed," said the manager of the estate, "to fly away as quickly as it came."

It was not till towards the end of the month that the first fatal cases took place in the parish of St. Andrew's, immediately to the north of Kingston, although the traffic and intercourse with the city in that direction are much greater and more frequent than in any other. Diarrhœa had, however, become prevalent for several days previously. About the same time, the pestilence was gradually creeping along the windward or eastern road towards the parishes of Port Royal, St. David, and St. Thomas in the east. Before the end of the month several deaths had occurred in the Dry River district, in the first of these parishes, about seven miles from Kingston. One or two fatal cases had also taken place in St. David's; and on the 27th a man died in a wretched hovel on the sea beach at Morant Bay, still further to the eastward.

Simultaneous with the spreading of the disease northwards from Kingston was its extension from Spanish Town, in the same direction, to the parishes of St. John's and St. Thomas in the Vale. The first recognised case in the latter was on the 27th; and the same day is the date of the appearance of the disease at Port Henderson, to the south of Passage Fort, and also in the hilly districts of St. Catherine's. The parishes of Dorothy and Clarendon, to the westward, had begun to suffer slightly about the same period; and there were one or two fatal cases in Manchester, in persons who had returned home from Spanish Town shortly before.

Already, too, there were threatening signs of the coming pestilence on the north side of the island. There had been some very suspicious cases in the last week of October in St. Mary's, a few miles inland from Port Maria; while in the adjoining parish of Metcalfe, not only had there been during the latter half of the month a prevalence of unusually severe bowel complaint in and around Annotto Bay, but a fatal case of cholera occurred upon an estate close to it, on the 31st. The man had not been out of the district. He had been affected for two or three days previously with diarrhœa, and had of his own accord, as negroes are wont to do in most illnesses, taken some drastic medicine.

It thus appears that by the end of October the pestilence had already gained a firm footing in the country, and threatened to extend its fatal power over the entire length and breadth of the island.

The Legislature was convoked by the Governor on the 22d, with the special object of enacting measures for arresting the spread of the disease, and relieving the afflicted poor. His Excellency, deeming that the powers vested in him under the Quarantine Act of the island (Vict. IV. c. 32.) were not sufficiently explicit for the requirements of the present emergency, pointed out in his opening speech to the Chambers the necessity of their "conferring some "additional powers for the abatement of nuisances, and the removal of obstruc-"tions to sanitary regulations." In their addresses, the Council and the House of Assembly expressed their readiness to co-operate in the adoption of such measures; but the only step taken by the Legislature was the passing of an Act voting the sum of 5,000*l.* for the expenses incident upon the visitation, and requiring the formation, in every parish in the island, of a Local Board of Health, which was to make such rules and regulations as might be deemed necessary by themselves "for the prevention and to avert the spreading of the cholera in their parish."

The whole burden of devising and executing these no easy measures was thus suddenly imposed upon a multitude of separate and independent unpaid parochial bodies, quite uninstructed as to their duties, in all parts of the island. Responsibility was of course nowhere. There was no Central Board to advise with or direct them in their proceedings; nor were even the necessary powers conferred upon them to enable them to carry into effect what they might think expedient, or to legalize what they might do.

After the passing of the above Act, the Legislature immediately adjourned to the 19th of the next month.

On the 25th of October, three weeks after the appearance of the cholera at Port Royal, the Governor in Council issued a Proclamation directing that all vessels arriving at any of the out-ports of the island from Kingston or Port Royal, after a passage of less than five complete days, should be subjected to "such quarantine as the Health Officer or other competent authority at such out-port or place shall direct." From the sequel, it appears that the Parochial Boards of Health were actually invested with the power of determining the period for which a vessel might be detained.

November set in most gloomily. At Port Royal the fury of the scourge had passed, the deaths per diem having fallen from 17 to 5 or 6. It was otherwise at Kingston and Spanish Town. Both places were involved in a cloud of pestilence, and the mortality was steadily on the increase. In the former, at the beginning of the month, each day numbered its hundred victims. The disease had appeared among the troops. During the second week the number rose to 150, and in the third week for several days upwards of 200 perished in the course of the twenty-four hours. Whole families and the entire occupants of some courts were swept off. Of thirty-nine inmates in one house, twenty perished within a couple of days. The weather during much of the time was wet and dismal, with a heavy close state of atmosphere. Business was all but suspended. Days of public prayer and humiliation were appointed and observed to invoke the Divine mercy. Cannon were fired off, gunpowder exploded, and tar barrels burnt in the streets, while houses were fumigated with incense, in the hope of neutralizing the atmospheric poison. The beds, bedding, and ragged clothes of the dead were taken down to the beach, and burnt there or cast into the sea, to prevent the risk of the contagion spreading. The thoroughfares, at all times bad, had been made worse by the recent heavy rains; while fresh heaps of the most offensive rubbish, which, by order of the authorities, had been brought out from the yards and houses, lay for days in front of the doors, from the want of the necessary means for its removal. Carts piled with coffins could sometimes be hardly dragged along, and graves could not be dug quickly enough. Dozens of coffins lay on the burial grounds for hours at a time, before a spadeful of earth had been removed. On one occasion, a corpse in the gully on the east side of the town was found partially devoured by the carrion vultures. The person had died in one of the hovels along the sides of the ravine, and his body must have been thrown out by the surviving inmates, either from the dread of contagion or to avoid the expense of burial. It required a large bribe to induce some coolies to dig a hole for its reception.

The Act of the Legislature had called into existence a Local Board of Health in Kingston as elsewhere. This Board soon became the scene of wrangling and dispute, and even of more discreditable proceedings. The more respectable members of the community withdrew from its meetings altogether, while death was raging in all directions. Meanwhile the journals teemed with remedies and modes of cure, and with the nostrums of advertising charlatans. In vain did the medical men labour incessantly; the hourly increasing number of the sick rendered their attendance, on even the developed cases only, quite impracticable; and the mortality must have been even greater than it was, had it not been for the exertions of the ministers of religion and of the mercantile community, who laboured as their assistants. Under their directions, these gentlemen went about from house to house in the most afflicted parts of the town, not only administering at their own expense medicines, food, and clothing, but often assisting also in the removal of the corpses from the miserable abodes of the poor, when the relatives refused to give their aid. Their conduct deserves all praise; it drew forth a tribute of commendation from the presiding judge at the opening of the following assizes. The example thus set in Kingston was worthily imitated in other towns, subsequently affected, in the island.

No one, it was confessed by all, had till then had any idea of the squalid wretchedness in which the mass of the people were living. Destitute of the most ordinary conveniences, their mere sheds of dwellings were found to be receptacles of disgusting filth. No clothing but a few dirty rags; no bed but

the ground, with perhaps an old mat under them; not a mouthful of food or pure water within reach, and often not even a spoon, cup, or utensil of any sort. "Many with an old corn bag, appropriately opened to give exit to the "head and arms, for a coat or cloak; scarcely housed or hutted under a few "rotten shingles, and enclosed by a few broken-up packing cases." Such was and continues to be the condition of a large proportion of the lower orders in Kingston. It was of course vain to expect much from medicine in patients so circumstanced. Every breath of air which they drew was contaminated, and to remove them when once fairly smitten by the disease was but to accelerate dissolution. There was, moreover, the utmost repugnance on the part of the people to be taken to a cholera hospital; the very name sounded death in their ears; nor was this wonderful; for most went in but to die, in consequence of their removal having been deferred too long. Not a few were found dead in the cart before reaching the doors of the hospital. This arose too often from the circumstance that the poor sufferers, after being grossly neglected by their relatives, were, when little hope of life remained, sent off, in order that they might receive the benefit of a free burial.

To add to the distress and alarm which prevailed, it was found that the supply of necessary medicines was insufficient in Kingston, and that in most of the towns and districts of the island it was still more inadequate. Orders had therefore to be sent to the islands of Porto Rico and St. Thomas for fresh supplies; and Commodore Bennett, upon the application of the Merchants' Benevolent Society, to which the community was throughout so much indebted, despatched his tender to Cuba for the same purpose.

At this time, too, most of the parishes had begun to advertise for additional medical assistance, offering large sums of money to any men of education; but they were not to be had.

It was on the 24th, when the pestilence was beginning rapidly to abate, that Dr. Macfadyen, one of the leading physicians of Kingston, fell a sacrifice. He had been affected with diarrhœa for two or three days previously; but, from the incessant requisitions upon his professional aid, he had been unable to pay proper attention to himself.

In the early part of November the ravages of the disease were nearly as great in some of the villages and clusters of houses to the north of Kingston, along the Hope Road, and on the adjoining estates of Papine, Mona, &c., as in the worst parts of the town. The natural situation of some of these places is exceedingly fine, being elevated several hundred feet above the level of the sea, with an open country around them, and having a dry gravelly bottom, and a considerable slope favourable to drainage. But then there, as in negro villages everywhere, the same local causes of unwholesomeness were invariably present; the fresh air excluded, while within and around were impurity and decay. Almost all the houses of the better conditioned classes escaped altogether. Several deaths indeed occurred in the back yards of some of these houses, but there the same noxious influences were at work as in the dwellings of the rural population. The first death in the Female Penitentiary was on the 5th.

In the first week of November the epidemic had manifested itself at a still greater elevation, in the same direction, viz. in Gordon Town, near the botanic gardens, at the height of fifteen hundred feet, and situated at the extremity of the carriage road from Kingston to Newcastle Barracks. It proved very fatal there in the second week, as might have been foreseen; the place being in a deep hollow, overspread by vegetation, and with an excessively humid atmosphere constantly charged with impurities. Spreading up to the higher districts in the direction of the barracks, it appeared about the 12th at the village of Middleton, at the base of the mountain slope on which the cantonment stands, and not above a mile distant from it. Its ravages there soon became excessive. "It is impossible to conceive," says Dr. M'Illree, the medical officer of the garrison, "a place more fitted for the devastating power of "cholera than this village. Its inhabitants are of a very low caste; it is the "abode of vice, filth, and misery, and just one of those places which are very "frequently found near garrisons. Two small rivulets which arise in the "gullies, one on either side of Newcastle, meet in the centre of the village; "the joint stream then runs on to the gardens, and opens into the sea to the "east of Kingston. In fact, all the attracting and predisposing causes for the "concentration of epidemic disease appear to be combined in this place, and

" the mortality has consequently been very great; I should say fully one third " of Middleton and its neighbourhood have perished." The disease lingered there till the middle of December. Shortly after its appearance in this locality, it showed itself at Charlottenberg, Chestervale, and other coffee properties in the mountains of St. Andrews and Port Royal, two or three thousand feet and upwards above the level of the sea.

During the early part of *November*, the plague continued to prevail with exceeding virulence on the road from Kingston to Spanish Town, and on many of the properties on either side. At Taylor's Caymanas, the Ferry, the Crawle, and at Cumberland and Dawkin's Pens, as well as at Passage Fort,—all notorious fever localities,—the mortality was very great; and the epidemic had begun to spread to the higher land northward, in the direction of Constant Spring, Stoney Hill, &c.

It was during the first half of the month that it raged with the greatest force in Spanish Town, where it reached its acme somewhat sooner, and proved still more destructive than even in Kingston. By the end of the third week the storm had nearly ceased; its subsidence was as rapid as its outbreak. Nearly an eighth part of the population had perished.

At the beginning of November the disease broke out with great virulence in Kent Village and other places in the ravine called the Bogwalk, along the course of the river Cobre, to the north of Spanish Town. Many parts in St. John's and St. Thomas in the Vale had then also begun to suffer severely. Worthy Park, Thetford, and other properties in Licidas Vale, in the former parish, were invaded in the second week; and about the same time Linstead, the chief town, as well as other places in the latter, were first attacked. The mortality at Linstead became very great; many of the low, filthy, and crowded houses lost all their inmates. The last victim was Dr. M'Dermott, on the 26th. He was exhausted by excessive fatigue during some weeks, and had been affected with diarrhœa for a day or two before his death. Before the end of the month not a district in St. John's was exempt, nor was any professional assistance to be had. The parish had been for several years without any resident practitioner, and no one now was to be obtained. The loss of life was accordingly very great in most of the affected localities.

With the view of tracing the progress of the epidemic in the other parts of the island, it will be most convenient to make, as it were, a circuit of it upon the map, starting from Kingston in an easterly direction.

In many of the districts, mountainous as well as lowland, of the parishes of *Port Royal* and *St. David's*, it appeared in the first or second week of November and caused no little destruction of life among the peasantry. At and around Yallahs, in the latter parish, it was particularly fatal. The earliest case at Yallahs Bay occurred about the 10th, and they rapidly increased. A large proportion of the people between that point and the " Eleven Mile Tavern " perished very miserably. No medical assistance was near, and even the ordinary necessaries of life were with difficulty procured. " The people died like rotten sheep." The dead could not be buried, and corpses were left for days on the ground, a prey to dogs and vultures. Most of the police force stationed in the district died, as was alleged, from want of provisions; at all events, their insufficient supply of food rendered them more easy victims to the disease. The lowland districts were of course most severely affected; nevertheless, several of the elevated coffee plantations in this parish, as in Port Royal and St. Andrew's, suffered considerably.

In *St. Thomas in the East* the pestilence prevailed, throughout the month, in the town of Morant Bay, destroying between a seventh and eighth of the inhabitants. " The virulence of the attack," Dr. Cooke remarked, " was " mainly influenced by the local conditions of the patient's dwellings. In some " places not a case recovered; whereas in others, more favourably conditioned, " the patients, although not seen until collapsed or nearly so, often rallied and " got over the attack. The difference was chiefly owing to the greater or less " impurity of the atmosphere within their dwellings."

Several of the estates to the north of the town lost a great many of their people. The situation of some of the negro villages is good, and they might

easily be made most salubrious; but the natural advantages are utterly neutralised by the state of the hovels and their vicinage.

Towards the east end of this parish and of the island, cases had begun to appear during the first week of November. On the night of the 5th, several persons were attacked in a hut upon Winchester Estate. It was immediately burned down, in the hope of preventing the spread of the disease. But another case had occurred simultaneously about a mile distant, and others soon followed. The epidemic rapidly spread over the entire extent of that great delta-like expanse of luxuriant cane field, the Plantain Garden River district. For some time before there had been, especially at night and early in the morning, "a hot steamy oppressiveness of the atmosphere quite intolerable." At Goldengrove, the earliest cases occurred on the morning of the 12th. By the middle of that day, seven persons had been seized, and of these four were already dead. Within a week there were 80 deaths, and the attacks were on the increase; the recoveries were very few. Those who knew the locality had anticipated the results that would ensue. The recent heavy rains had made the roads almost impassable. "The cottages," wrote the intelligent manager of this fine estate, upon the first appearance of the disease, "are clustered together in "such a mass, with a population of nearly 1,000 souls, and the malaria at this "season of the year emitted from the canals and swamps is so great, that I "dread the ravages it will make here. We are too in a sad dilemma for "medical assistance. There is the greatest difficulty to procure nurses for "the patients, or to get hands to dig graves or bury the dead. Labour is "entirely suspended, and it is beyond the power of my pen to describe the "dreadful panic which has seized the people." The crop of canes upon the ground was the largest that had been known for a great many years. Immense loss was sustained.

The numerous other estates in this district, all situated within a short distance from each other, as well as the town of Bath, were speedily under the influence of the epidemic. Before the end of the month, upwards of 600 of the labouring population were destroyed. Fully two thirds of the cases were fatal. The action of the poison was often so intense that the patients fell down at once into a sort of lethargic stupor, without vomiting or purging, and sank collapsed in a few hours. Frequently there was but one enormous evacuation from the bowels, and fatal collapse ensued immediately. Only a small proportion of the cases could be visited by the two resident medical practitioners, both of whom suffered severely from diarrhœa; and no small difficulty was experienced in procuring medicines. The state of things had been made worse by an injudicious attempt, on the part of the managers of some estates, to prevent communication with places known or believed to be infected. The result was, that for a time the necessary supplies of food were partially interrupted.

In the Manchineal district of the parish, only two or three scattered cases were observed during this month. The same may be said of the adjoining parish of *Portland*, with the exception of the Burlington and St. Margaret's Bay district, near the mouth of the Rio Grande, and towards the confines of *St. George's*. About the last week of November there was a considerable mortality in both places. A few insulated cases had been already seen in Port Antonio and on some of the adjoining estates, but the disease as yet manifested no tendency to spread. One or two small vessels were very needlessly detained in quarantine, in obedience to the orders which had been issued by the Government. Drs. Clachar and Henderson, of Port Antonio, had remarked the unusual character of the season,—indicated by the frequent failure of the sea breeze, the prevalence of westerly winds, which are always unwholesome, and the excessive heat and stagnancy of the atmosphere.

The parish of St. George was much more severely afflicted at this time. The earliest cases occurred in the second week at Rose Hill ("a most unfavourable locality, densely populated, and choked up with vegetation,") in the Buff Bay River district, and at Windsor Castle estate on the seashore, a few miles from Metcalfe. In both instances, the first patients were said to have come from the neighbourhood of Annotto Bay. In the third week it broke out in the Maroon settlement of Charles Town, and also in the town of Buff Bay. Towards the end of the month, it had begun to appear upon the adjacent estates of Woodstock and Kildare. In all these localities the sources of an impure and

malarious atmosphere were abundant. Dr. Chrichton, the only resident medical man in the district, fell a sacrifice to the disease. His case was very distressing. He was attacked about the 25th or 26th, and subsequently struggled through the immediate illness, notwithstanding he had no professional attendance; but eventually he died from secondary fever. It was only when his case was desperate that he was once visited by a medical man.

The district, intermediate between St. Margaret's Bay in Portland and Buff Bay, remained exempt throughout November.

Metcalfe was, as we have seen, the first parish on the north side of the island where the epidemic manifested itself. The case on Agualta Vale Estate, on the last day of October, was immediately followed by another in Annotto Bay, without any traceable communication between them or with any infected locality. The disease rapidly increased in the town, and at the same time broke out on several of the adjacent properties, so that by the end of the first week in November the mortality was very great. The whole district is one of extreme malarious humidity. Annotto Bay is in all seasons a most unhealthy place of residence. It consists of one long street of detached and irregularly placed buildings, running nearly parallel with the beach, and closely hemmed in on the land side by lagoons and morass. The street is divided into three parts by the two embouchures of the river, these divisions being known as the lower, the middle, and the upper bays. Their insalubrity corresponds with their position; the lower or leeward bay is the most unhealthy; it contains also the worst conditioned dwellings. It was in this part that the first case of cholera occurred, and the disease continued to cling to it for some time before it invaded the other divisions of the town. In the middle bay, the earliest cases took place in a notoriously filthy yard, close to the river's edge, and which Dr. Clarke termed the "rookery," from the character and condition of its occupants. He had predicted from the first that this would form one of the chief plague haunts in the town, and so it proved. The ravages in the middle and lower bays, and on several of the estates in the neighbourhood, became excessive; and there was no other medical man to assist or relieve Dr. Clarke during the whole time. His health at length gave way, and he was obliged to leave, so that the whole parish was left without any professional assistance. The Local Board of Health offered 100*l.* a month; but the only person who offered his services was an advertising nostrum-vender. Throughout the whole month, here as in other places, the building to which the sick were sent off proved rather a dead-house than a hospital; and so great was the mortality within it, owing partly to the accommodation being utterly insufficient for the numbers admitted, and such was at length the consequent reluctance of the sufferers to be sent, that Dr. Clarke urged its discontinuance, feeling convinced that the removal of the patients was productive of much more harm than good. By his judicious advice, a number of persons were taken from their unwholesome dwellings, in many of which deaths had already taken place, to two large and airy wharf-houses in the town. The results were most satisfactory; not a single fatal case occurred among them. Would that the plan could have been carried out to a much larger extent!

The neighbouring estates which suffered most severely were Agualta Vale, Gray's Inn, and Gibraltar. On many to the eastward and westward of the bay, as at Fort Stewart in the one direction, and at Esher, Orange Hill, Moor Park, and Water Valley in the other, the loss of life was truly dreadful; on several, the negro villages were all but depopulated. The Albany district also suffered most severely. Most of the huts there are no better than large dog-kennels, having no opening but a small door, and without a stick of furniture in them.

St. Mary. This, like the preceding parish, early began to suffer. An imported case occurred in Port Maria, on the 27th of October, in a person who had returned from Kingston. He recovered, and no other case followed then. During the first week of November several people were attacked at Heywood Hill, Islington, and other places inland from the bay; also in the Retreat, the Rio Nuovo, and White River districts to the westward. In all of these places the disease quickly increased in frequency and force; and, upon too many occasions, the aggravation of its fatal power was distinctly attributable to the mischievous practice of holding wakes; yet there was no law to prevent them. Meanwhile all agricultural labour was at a stand-still, and no amount of wages would induce the people to work.

Towards the end of the month, the influence of the epidemic began to be felt at Port Maria. Numerous attacks of severe bowel complaint occurred, but none proved fatal till the 23d; nor did the pestilence descend in force for another week. At the seaport of Orocabessa, to the westward, cases first began to appear about the same time. Its immediate neighbourhood had however been affected for at least a fortnight before.

St. Anne. Towards the end of October two or three persons, upon their return from Spanish Town, had been attacked in the neighbourhood of the Moneague, in the mountainous part of this parish. They recovered, and no one else suffered. It was around St. Anne's Bay that the epidemic influence was first experienced. A case of cholera occurred on the 3d or 4th near Richmond Estate, a few miles to leeward of the bay, and one in the bay itself on the 6th; both in persons who had come from Kingston. Immediately after, or almost simultaneous with the latter case, diarrhœa became very prevalent in the town. There was the utmost alarm among the people from the first, from the dread of contagion more especially after death; for such unfortunately had been the doctrine proclaimed in some of the public journals. No other fatal case took place until the 13th; after which date the victims rapidly multiplied day after day throughout the rest of the month. "It broke out at the very same time "in different villages four or five miles apart from each other, and without any "traceable intercommunication." In few towns were the ravages greater than in St. Anne's Bay. Crowds of people fled panic-stricken from the place; and Dr. Bayley, the only resident practitioner, and two or three other gentlemen, were left for some days nearly alone to attend the sick and dying. Shops and stores were closed, and all business, except that of coffin-making and grave-digging, was suspended. No little difficulty was experienced in obtaining articles of food. The disease was of the most virulent type, often proving fatal in the course of a few hours. "In numerous instances," Dr. Bayley remarked, "the patients appeared to be struck from the very first with death; they lay in "a state of stupor, seeming scarcely to hear when bawled to, with little or no "vomiting, purging, or cramps, and apparently with little suffering of any kind. "When roused from their stupor, the only complaint they made was of pain in "their right side. If the head was raised up, it rolled down unless supported, "as if there was not strength to keep it up. The pulse was gone, and even the "action of the heart was not to be felt." Exceedingly few who became collapsed recovered; and no small proportion of the attacked rapidly fell into that state, not unfrequently from being cruelly neglected by their own families. Instead of administering the medicines which were provided, or using any means to restore the sick, they proceeded at once to dig a grave to be for the reception of the unhappy victim as soon as death seemed to take place. There is too much reason to believe that, in more instances than one, life was not extinct, when the body was dragged from where it lay to the hole which had been prepared, within a yard or two's distance from the door of the hut.

The situation and condition of the town of St. Anne's Bay amply account for the fatal malignancy of the pestilence there. The ground on which it stands slopes up from the beach to high land in the rear, and is overrun with neglected vegetation. Immediately to windward there are marshy spots, the miasm from which cannot but affect the town; but by far the worst feature is the existence of a morass in the very middle of it, between the main street and the sea-shore. This swamp, overgrown with wild sugar cane and other paludal weeds, is traversed by two or three paths; a good many dwellings, generally of the worst description, have been put down in this pestiferous locality. In wet weather the water stands a foot or two in depth. It was impossible not to be struck with the peculiarly unhealthy aspect of the people; even the pigs seemed to me to be more unthriven and diseased than elsewhere. The ravages of the cholera here were of course frightful. The other locality, which suffered most, was along the deep wet gully or ravine on the east side of the town. Very many of the *cholera sicca* cases occurred there near the river side. Dr. Bayley had foreseen that this would be one of the worst haunts of the pestilence, and he had accordingly urged many of the people to abandon the place. Every hut has a pigstye, and often a foul privy to boot, close to and often right to windward of it.

What must add to the insalubrity of the upper part of St. Anne's Bay is the quantity of vegetation in every part, close to and around the houses, and the lodgment of water in the hollows of the irregular ground on which they stand. The mere amount of decaying organic matter at all times on the surface is, in itself, sufficient in a tropical climate to be most detrimental to health, especially when epidemic disease is abroad. There is always a great deal of fever in the town at the fall of the year, even among the blacks; leaving tumid bellies and enlarged spleens. The malignant form of fever, known as yellow fever, is apt to attack the white residents. There is much destitution and poverty among the lower classes.

Dr. Bayley is of opinion that intemperance had a good deal to do in aggravating the fatality of the pestilence in many parts of the parish. "Wherever," he remarked, "there is a rumshop in a negro village, there is invariably "want and poverty among the people. The greatest evil in these villages is the "rumshop."

Most of the persons who fled from the town, although many of them were affected with diarrhœa at the time, and who betook themselves to pure airy localities in the neighbourhood, escaped. Of a good many who went from huts in the gully, in which deaths had taken place, to the fine elevated grounds of Windsor Castle estate, about a mile and a half to windward of the bay, not one died.

The population of St. Anne's Bay before the visitation was between 900 and 1,000. A third part, at least, perished. Several white persons died; but they were all either intemperate or of broken constitutions.

Richmond, Drax, and other properties around the town, as well as the negro villages of Priory and Lewis, suffered severely while the pestilence was raging there. During the second week of November, the town of Ocho Rios, and other places in that district of the parish, were invaded. The disease had also reached some of the mountainous inland districts, and proved very fatal in some places. In the Clarktown district, under the care of Dr. Stennett, it prevailed chiefly during the latter part of the month. None of the better-conditioned classes suffered.

The epidemic influence does not seem to have travelled westward, or to leeward, of St. Anne's Bay for eight or ten days after it had fairly manifested itself there, notwithstanding uninterrupted communication. Thus, the first case upon Llandovery estate was on the 24th November; and at Salem, a little farther west, about the very end of the month. There was a good deal of diarrhœa at Dry Harbour about the same time, but no case of cholera occurred there.

The same was the case with the easterly part, (as in the Duncan district,) of the next parish, *Trelawny*, which, speaking generally, may be said to have been about a fortnight later of being visited by the pestilence than that of *St. Anne's*. In Falmouth, indeed, its principal town, there was a considerable prevalence of bowel complaints during the second week of November, and the first spontaneous case of the malignant disease was on the 13th; but the disease did not appear in the rural districts for two or three weeks subsequently.

St. James.—It is a curious fact that the locality in this parish where the earliest cases of the epidemic occurred was at, or close to, that very point on the sea-shore where the suspicious death took place on the 26th September, which has been mentioned in a preceding page. Two or three persons, two of them fishermen, died during the second week of November; one on the 8th, and another on the 13th; the third case was a few days subsequently. The disease did not become general in the village until the beginning of the last week, when it also broke out simultaneously right and left of the place, as at Spot Valley, Cinnamon Hill, and Rose Hall, all on the sea-coast road to Montego Bay. The negro villages on these estates, more especially on the last named, suffered very severely. While 32 out of 45 of the negroes on that property perished, there was only one death among 20 coolies located there. The reason was obvious; the dwellings of the latter were altogether superior to those of the former; they were raised some feet from off the ground, and they were much more accessible to air, less crowded, and far cleaner. The food of the coolies was also better; they lived chiefly on rice, fresh fish, and goats flesh. In one negro hut, five out

of seven inmates died. The progress of the mortality was as follows:—On the 25th November, the date of the outbreak, six deaths; on the 26th, five; on 27th, three; on 28th, two; on 29th, two; on 30th, five; and then one death on December 1st, 2d, 3d, 4th, 5th, 8th, 17th, and 27th.

It was at the end of November that the epidemic reached Montego Bay, which was thus about a fortnight later of being visited than Falmouth, 18 to 20 miles to windward. There had been no interruption of intercourse between the two places.

Throughout the month the two most westerly parishes in the island, *Hanover* and *Westmoreland*, remained all but untouched by the breath of the pestilence. In *St. Elizabeth*, it had appeared during the second week in the town of Black River. The weather had for several weeks been intensely hot and oppressive. "The atmosphere felt as if it was too thick to breathe; it seemed as if we were "in an oven," said one of the residents. The earliest case was on the 11th, immediately after which diarrhœa became strikingly prevalent among the inhabitants. The case could not be traced; it occurred in a miserable hut on the sea beach. No other death took place until the 20th; thereon fresh cases occurred daily. The disease, however, did not exhibit any tendency to spread to the rural districts for another fortnight, although of course there was constant communication with the town.

Manchester was at no time affected with cholera in its epidemic form; but the adjoining parish of *Clarendon* suffered in the present and following months, with considerable severity in several of its districts, especially on Mount Parnassus estate, and in the Lucky Valley, and other low-lying situations. It was very severe at Chapelton and its neighbourhood. Two of the medical men in the parish died. By the end of the month the disease was extending to the mountainous districts.

In the next two parishes of *Dorothy* and *Vere*, both of which are notoriously fever regions, the cholera proved very destructive. There was very generally a marked prevalence of bowel disorders, accompanied with cramps in the limbs, for several days before the malignant form of the disease manifested itself, and before any death took place. In Dorothy, the chief stress of the plague at first was about Old Harbour and on the neighbouring estate of Bushy Park, at both of which places the mortality was very great. There was no medical man in the parish, and none was to be had. In Vere, the earliest case occurred in the Portland district, on the 3d. It could not be traced to intercourse with any infected locality. There had been a good deal of diarrhœa in the district for a week before. The next case was three days later, on the estate of Monymusk. Forthwith the epidemic appeared at different and remote parts, and very generally in a most malignant and rapidly fatal type; as had been anticipated by the medical men, from the extremely malarious climate of this parish. Sudden and mortal collapse was the leading symptom, with little or no discharges or cramps. The last stage, so to speak, came first; or, as it has been sometimes expressed, the attack "commenced with death;" and the patients seldom or never rallied. In some localities, especially during the first week or two of the invasion, not one in twenty persons who were attacked recovered. Medicines seemed to be of no avail; the disease was quite uncontrollable. Yet very few of the better classes were severely attacked. Several of the negro villages were all but depopulated. At Brasiletto (an abandoned estate, I believe), the mortality reached its acme. Three only out of 54 people survived; and this fearful loss of life took place within fifty hours of the outbreak of the disease. It seemed as if a deathblast had swept over the place from the great morass to windward. The corpses lay where the miserable victims had perished, until their stench had drawn the vultures and hogs to the spot. When discovered, they were horribly mangled; and as no one could be had to remove and bury them, the huts were set fire to and burned to the ground, with the bodies within. This dreadful catastrophe occurred at the very end of November. In Vere as elsewhere, many of the people were found, when attacked, to be in a state of absolute starvation.

It thus appears that during November a very large portion of the island was under the full force of the pestilence; the rest was dreading its terrible approach. The utmost alarm prevailed everywhere, and all the while, there was no central power to direct or advise.

The House of Assembly met on the 19th of the month for a few days, and again adjourned to the 10th of *December* after voting a further grant of 10,000*l.* for the relief of the suffering parishes. By a clause in the Act, the existing Local Boards of Health, which had been called into existence only a month before, were now declared to be dissolved, and others, consisting of a smaller number of members, appointed in their stead. This ill-timed change gave rise to no little dissension and angry feeling in many places; and the result was, that some of the most active and useful members of the former boards now refused to take part in the proceedings.

At the beginning of *December* the pestilence had ceased in Port Royal and Spanish Town, and had all but disappeared not only from Kingston but also from the adjacent parishes of *St. Andrew* and of Port Royal. Cases still continued to occur almost daily in the city; but the intractability as well as the frequency of the attacks was becoming less and less. In *St. David's*, too, the storm had nearly passed away; and although still lingering in and around Morant Bay, near the confines between this and the neighbouring parish of *St. Thomas in the East*, its violence was over. The Blue Mountain valley district was, however, still suffering severely; but, from the difficult accessibility of several of the negro settlements there, no accurate accounts were to be had. Port Morant, about ten miles eastward of Morant Bay and between it and the Plantain Garden River district, did not begin to suffer until the first week of December, although the pestilence had been on either side for more than a month previously, and intercommunication had never been interrupted. From this time till the end of the year, it caused great mortality not only in Port Morant, but also in several of the estates, such as Clifton Hill, Airy Castle, between it and Bath. In the Plantain Garden River district, the stress of the visitation had been during the latter half of November and the first week of December. It then abated, ceasing altogether on some of the properties, and lingering on others and also about Bath and its neighbourhood. A few scattered cases continued to appear, during this month, in the Manchineal district of the parish.

Portland, which had hitherto scarcely suffered, except at one point on the coast near its west boundary, now came in for its share of the prevailing sickness and death. At the beginning of the month, "belly-sickness" as the negroes call diarrhœa, was very general in several districts. In Port Antonio no other case of cholera, since the 23d of November, occurred until the 7th of this month in the same quarter of the lower town, in a crowded, damp, and dirty house. About that time, too, several properties in the neighbourhood began to suffer. The disease rapidly increased, and during the rest of the month continued to prevail with destructive force. Port Antonio lost a sixth of its inhabitants, viz. 200 out of a population of about 1,200. The lower town of course suffered most. There are numerous causes, natural as well as artificial, of unwholesomeness present; and where these most abounded, as in the part called Somers Town and near the swamp at the leeward end of the town, the ravages were greatest. One case only occurred in the prison, which contained seven or eight prisoners at the time. There were other five persons in the dormitory where the patient was attacked; but none were affected. Two thirds of the patients in the cholera hospital died. Several were dead when brought to the door. The upper town, or Titchfield, is finely situated, and well exposed to the sea breeze; but the neglected condition of the undulating surface on which it stands, and the quantity of decaying rubbish around and often under many of the houses cannot fail to neutralize the salubrity of its natural position. There was accordingly a larger amount of mortality there than the casual observer might have anticipated. The barracks are situated at the extreme point.

At Buff Bay in *St. George* the cholera continued during the first half of December, and for a week or two longer on some of the adjacent estates. The mortality in the Maroon settlement of Charleston was very great. In *Metcalfe*, too, the disease did not cease its ravages until about the middle of the month, in Annotto Bay and its neighbourhood. Mr. Murphy, R.N., who had medical charge of one district, says, "The huts of the people are for the most part "small and extremely filthy, with earth floors and accumulations of dirt under

" the beds. Average number of inmates seven or eight; diet generally un-
" wholesome and often scanty. All the better conditioned classes escaped."

It was during the last night of November and the early morning of the 1st of December, that the dreadful outburst of the pestilence took place at *Port Maria*. Within twelve hours between thirty and forty persons died. An eye witness, writing on the 2d, says, "The epidemic descended upon us yesterday;
" its effects were truly awful. There was scarcely a house in which there was
" not either a dead or dying person, and in several four or five. Whole families
" were swept off in the course of a few hours, and there is no appearance
" to-day of the disease having abated. It is impossible to state the number of
" cases or deaths, as the town is in a state of the greatest excitement. Until
" yesterday we scarcely knew what cholera was, although we had several cases
" previously. It seemed to lay hold of the whole population simultaneously.
" Dr. Cooke was indefatigable, but what could one man do in a place where so
" many were attacked at one time? The disease frequently assumed the form
" of collapse, without vomiting, purging, or even pain." From day to day the mortality went on increasing. In the first week nearly a third of the people who remained in the place had perished; nor was the hurricane stayed; it lasted for another week. No language can describe the horrors of the scene; it was altogether the most terrible outbreak in any town in the island. An application was made to the Governor to send a vessel round to remove the surviving population from the place. Had it not been for the presence of half a dozen of the stout-hearted white residents, including the Rev. Mr. Murphy, Mr. Shaw, and other leading merchants, the dead must have been unburied, and many of the living have died of starvation. It is painful to record that Dr. Cooke was the last victim of the pestilence. He had been over and over again worn out with sheer exhaustion, but had borne up through all the fatigue and distress. At length he was suddenly attacked on the night of the 30th, and died early next morning, without of course the benefit of professional aid.

There was great mortality during the early part of *December* at several parts along the coast westward of Port Maria, as at Little Bay, Oracabessa, Salt-gut, and in the White River district. Many of the inland and hilly districts also were then severely visited. In the Retreat district one sixth of the entire population was estimated to have died.

In St. Anne's Bay and its neighbourhood, the violence of the visitation ceased after the first eight or ten days of the present month. At Dry Harbour between the bay and Rio Bueno upon the confines of this parish and Trelawny, there was a good deal of diarrhœa about the early part of December, but no cases of cholera occurred. It was not till the 10th that the epidemic commenced at Rio Bueno, although one or two very threatening cases had appeared there a fortnight previously. The disease proved then very destructive; and the mortality was aggravated, there is too much reason to believe, by the utter neglect of the poor sufferers. "The moment they are seized," writes the Rev. Mr. Stewart, incumbent of Rio Bueno, "if the relatives do not abandon
" the patient, they lay him on the floor, strip off any good clothes, and think
" the probable loss of the bed by the sick person's dying on it of much more
" consequence than the loss of his life." A large proportion of the persons attacked were half famished at the time. The greatest mortality occurred at one end of the town where the houses are built right into the morass, and where the first cases occurred. Rio Bueno presents a striking instance of perverse blindness in selecting a bad locality for dwellings, while a more favourable one is close at hand. The worst houses too are always to be found in the worst localities.

In the district between Rio Bueno and Falmouth, the disease appeared in the early part of the month. The first case was at Harmony Hall on the 2d, at Orange Valley on the 3d, at Stewart Town on the 6th, at Duncan Town on the 8th, at Deeside on the 9th, at the Kent Estate on the 10th, and at Spring Vale Pen on the 12th. In several, if not most, of these places diarrhœa was prevalent for a week or so previously to the occurrence of the earliest case of cholera. The exemption of Dundee estate, in the immediate proximity and constant intercourse with infected localities, was doubtless mainly owing to its elevated salubrious position. Falmouth continued to be severely afflicted during the greater portion of December. The village of Saltmarsh, only three miles to

leeward and having daily communication with Falmouth, did not begin to suffer until the 13th, or a month after its appearance there.

It was in *December* that the epidemic acquired its full development in *St. James*. The gradual progression of the disease in the town of Montego Bay, from the beginning of the month until it reached its acme of power during the third week, will be seen by the daily register of deaths afterwards given, and which was very accurately kept by the highly intelligent secretary of the Local Board of Health, Mr. Lewin, to whom I am indebted for many particulars. During its prevalence in the town, the pestilence broke out with great force in some of the adjacent properties, while others immediately contiguous to them remained exempt for a month or longer afterwards. "The first cases," says Mr. Lewin, "appeared about the same time, viz., the 6th of December, in "various localities in the parish quite apart and considerably remote from each "other, such as at Fairfield near Montego Bay, and Newman Hall, inter- "mediate between the bay and Maroon Town. In the latter district, which "is much more elevated than the former, the cases were only sporadic and "solitary, showing no tendency to spread. The severe outbreaks occurred "near river courses, and where rank vegetation abounded, especially around "dwellings." The negro villages on the estates of Catharine's Hall, Irwin, and Latium were most severely visited. On the last-named property, where the disease appeared on the 5th, upwards of three fourths of the people died. "The "attacks were often so rapidly fatal that able-bodied labourers, while employed "in the boiling houses, were seized with cramps and spasms, became collapsed "at once, and speedily expired. Numerous corpses remained unburied for "days, and others were laid in such shallow graves that the atmosphere became "tainted with the putrid effluvia." Upon another estate, where the disease broke out on Christmas Day after heavy rain, no fewer than seventeen deaths took place within four or five hours.

Hanover was about two or three weeks later in being visited by the epidemic than the parish of St. James, immediately eastward of it. The spot where it first appeared was on the seacoast at Sandy Bay, about twelve miles to windward of Lucea, the principal town. A case (whether imported or not was not known) occurred there on the 29th November; and this was followed by several others during the next week or two, not only in Sandy Bay, but also at several neighbouring places on the coast, such as Tryall, Mosquito Cove, Flint River, &c. During the latter part of November there was a good deal of diarrhœa and other sickness at Lucea, and the inhabitants were in consequence in great alarm at the dreaded advent of cholera among them. A few isolated cases occurred during the first half of December; but it was not till the last week that the epidemic invasion can be said to have commenced. By the end of the year, the daily mortality was rapidly on the increase. At two or three points on the coast westward of Lucea, and in the direction of the adjoining parish of *Westmoreland*, sporadic cases took place during the present month; one at Cousin's Cove on the 18th, one at Green Island on the 11th, and a second there on the 18th, &c. The disease seemed also at this time to be extending itself over the high lands in the interior, towards the confines of Hanover with Westmoreland.

As the history of the epidemic in the latter parish presents some peculiar features of interest, it will be useful to note all the circumstances that are known. During December, several fatal cases had occurred on the borders of Westmoreland and St. James. They were all in persons who had returned from Montego Bay, where, as has been seen, the pestilence then prevailed. In no instance, did the disease spread to others. On the 19th, a man was attacked in a boat at Savanna-la-Mar. The boat had come from Falmouth. He was attended by all the resident medical men, and recovered. The other two men in the boat were not affected. At Mount Pleasant, about five miles eastward from Savanna-la-Mar, and also in the Blue Fields district a little further on in the same direction, there was a considerable amount of bowel complaints throughout the entire month, but no case of cholera occurred. At Achindown, intermediate between Savanna la Mar and Black River, a solitary case occurred about Christmas. The person had come from Black River. None of the other inmates of the hut sickened, nor did any other case ensue upon the estate.

St. Elizabeth. The pestilence continued in force at Black River until the end of the third week in December. The entire mortality amounted to 120

out of a population of between 900 and 1,000. None of the better-conditioned classes, except two or three persons of very intemperate habits, died. Only one white person was severely attacked. The town is surrounded on two sides by a morass and the river, the other side facing the sea. That portion of the town where the first case happened, and where the greatest mortality occurred, is in all seasons the most unhealthy. During the height of the disease at Black River, a vessel arrived there with medicines on board. She was detained in quarantine for some days, before being permitted to have communication with the shore. The health officer said that he had no alternative, considering the orders which he had received. In the first week, the disease spread to the rural districts inland from Black River. It appeared at Middle-quarters on the 7th, and at Holland and Lacovia about a week later. On Holland estate it broke out with exceeding malignancy; the country around is very wet and marshy. As almost all the attacks were at night, and as the negroes would not then stir out of their huts to procure assistance for their relatives,—they felt cold, they said, and saw figures dancing on the ground,—a large proportion of the attacked were found dying or dead next morning when visited by the overseer. In several instances the unfortunate victim was at once abandoned by his family, without so much as water near him to slake his thirst. No sooner did life appear to be extinct, than the body was put into a grave already prepared. It was no uncommon thing for a person, apparently in health one hour, to be under the ground within three or four hours after being taken ill. Dr. Berry King, who attended the district, informed me that he felt convinced that several were interred before actual death had taken place. He knew of two cases where the persons recovered, while preparations were making for their burial. So great was the dread of touching a dead body,—the idea had been generally circulated that the contagion of cholera is much more active after death than during life,—that on more than one occasion a rope was actually put round the neck of the patient while yet alive, in order that the corpse might be dragged to the hole close by without the risk of contact.

At Lacovia the manager took the wise step of dispersing all the people, nearly 200 in number, from their huts as soon as the first case had occurred among them, with the happy result that scarcely any of them were afterwards attacked.

The state of a large portion of the people and of their abodes, in St. Elizabeth, is described by a resident to be "most miserable; the huts not fit for "habitation with dirt and filth, the accumulation of years, in and around "them, enough in itself to breed a pestilence. Not a single comfort or even "convenience; often not a blanket to cover them or a morsel of nourishment "at hand."

In the elevated dry districts of the parish, although there were several sporadic cases terminating fatally in persons who had returned from Black River and other infected places in the plains, the disease never exhibited any epidemic tendency, although there was a prevalence of diarrhœa among the people both before and during the occurrence of the cases.

During December the pestilence continued to exist, and in some localities with severity, in various districts in *Clarendon*, *Dorothy*, and *Vere*. Towards the end of the month it had, however, greatly abated in all of these parishes. It continued to linger in some parts of *St. Thomas in the Vale*.

On the 5th of December the order issued by the Governor-in-Council on the 25th October, imposing quarantine at the outports of the island on arrivals from Kingston and Port Royal, was rescinded.

The House of Assembly met on the 10th, and after two days' sitting again adjourned for another month, in consequence of the absence of most of the members. Memorials to Her Majesty, praying that measures might be taken by the Imperial Government to direct the importation of captured slaves and other African labourers into the colony, with the view of supplying in some degree the dreadful loss of life that had already taken place and was still going on, were adopted by both Houses of the Legislature.

A very able petition from the Local Board of Health of Kingston, setting forth the intolerable nuisances which abounded in that city and required correction for the safety of the public health, was presented to the House of Assembly on the 13th. Embodying, as this document does, the sentiments of all the

medical men of the city, it might have been expected that it would have been taken into the serious consideration of that Honourable House.

Resolutions to the same effect had been agreed to by the corporation of the city; and several of the members of that body, holding seats in the House of Assembly, declared their intention to introduce a comprehensive Sanitary Bill for the improvement of all the towns of the island.

At the beginning of 1851, the pestilence had nearly or altogether ceased in many of those parts of the island which had been severely afflicted during the preceding two months. A dropping case still continued to occur now and then in Spanish Town and in Kingston; but the disease was generally tractable. It was not, however, until the 27th of this month (January) that Kingston and Port Royal were declared to be perfectly free, and that clean bills of health were given to vessels leaving the harbour. The great inconveniences, necessarily incident upon this state of things, had thus continued for a period of three months and a half.

It was chiefly towards the eastern and western extremities of the island that the disease was most strongly felt throughout January, although it still lingered in some other parts, and occasionally too gave manifestations of returning force. The neighbourhood of Essington, in *St. David's*, was not quite free; and in *St. Thomas in the East*, not only did it continue in the Blue Mountain Valley, but it had threatened to re-appear, after several weeks' lull, in the Plantain Garden River district. Cases too, occasionally fatal, occurred at and around Bath in the one direction, and in the Manchineal district in the other.

In Port Antonio, the severity of the visitation was not over till the first or second week of the month.

The Hope Bay district, in *St. George's*, which had hitherto escaped notwithstanding the existence of the disease on either side of it, began to be affected in the first week. It appeared first in the negro settlements at Caenwood, on the Swift River, and extended thence to several of the adjoining estates. Mr. Browne, Surgeon, R.N., who subsequently took medical charge of this district, pointed out to me the horribly disgusting condition of the dwellings of the people at Caenwood, arising principally from the existence of the foulest pigsties imaginable close to them, polluting the atmosphere all around. By his energetic remonstrances with the Local Board of Health, the pigs were for the time driven out from the places, and the sties covered with a thick layer of earth. There was an immediate diminution in the existing violence of the disease among the people.

Occasional cases only now took place in the Buff Bay district of the parish; but very many of the people still continued to suffer from diarrhœa and excessive debility, so that little agricultural labour was as yet resumed.

Metcalfe and *St. Mary's* were nearly exempt. In the former parish, a number of cases of severe chicken-pox occurred about this time; it was stated at first that smallpox had broken out.

The only remark to be made respecting *St. Anne's* is to note the occurrence of three or four fatal cases of cholera in a negro hut at a place called "the Folly" on the sea coast near to Dry Harbour, when there was no disease existing in the neighbourhood.

In *Trelawney*, cases continued to appear at Falmouth and on some of the adjacent districts about the beginning of the month; but, as it advanced, the disease entirely ceased.

The abatement was less decided in *St. James*. It continued in Montego Bay, but with mitigated severity, throughout January. It was still, however, very destructive in some of the rural districts.

Hanover now came in for its full share of the wasting pestilence. In Lucea the ravages were excessive, and did not cease till the last week of the month, On some of the estates too in the immediate vicinity, there was a frightful mortality. Thus at Orange Cove estate, within a mile or two of the town, 75 out of 90 persons were swept off, including the overseer and book-keeper, and also 14 coolies. It was nearly a renewal of the dreadful catastrophe at Brasiletto. The overseer and book-keeper, who replaced those who had died, were attacked within a day after their arrival, but they recovered. The negro village, as well as the overseer's house, on this estate are situated on rising ground facing the sea; but unhappily there is a foul fœtid morass of considerable extent right between, so that the sea-breeze is inevitably poisoned with

the malarious exhalations. It has always proved a deadly place to white men. The Reverend Mr. Stainsby, the rector of Lucea, told me, when we visited the locality together, that he had during his incumbency buried four or five overseers of this property. The coolies were located in the yard of the overseer's house.

The adjoining estate, also, of Haughton Court suffered severely. The first case was on the 4th. This too has always been the haunt of fever, often of a very bad type. On both estates there had been a good many cases of severe bowel complaints for a week or two before the malignant disease appeared.

Bachelor's Hall estate was all but depopulated.

The localities to leeward of Lucea became affected during the first two or three weeks of January. At Esher estate the first case was on the 4th. At Lance's Bay on the 14th; there had been a good deal of diarrhœa before. At Cousin's Cove there was a case of choleraic diarrhœa on the 15th; but the first death did not take place till the 22d. At Davis's Cove and also at Green Island, on the very junction of Hanover and Westmoreland, insulated attacks had occurred during December; but the disease did not then spread, although there was much diarrhœa in the district. These sporadic cases appear to have generally occurred in men who had been drinking to excess, and been exposed to the night air. Several of the patients were fishermen.

In the Fish River district, abounding in ponds and marshy flats, the earliest case of cholera was on the 6th in a watchman, found dead in his miserable hovel; there had been much diarrhœa for a week previously in the neighbourhood. The second case was on the 15th. A wake was held, and seven of the persons who attended were attacked on the following day; most of them died. The disease then spread generally. A few fatal cases took place about the same period at Rock Spring, Salt Spring Mountain, &c.; but they were by no means numerous, although there had been a general prevalence of bowel disorders over the whole district, for a considerable time before the earliest case of developed cholera took place.

In the Greenland and Middlesex districts of the parish, immediately inland from Lucea and in the direction of the confines of Westmoreland, the influence of the epidemic began to be felt in the latter half of January. The district affected latest was that which had the freest communication with Lucea, while the pestilence was raging there.

Westmoreland still remained nearly exempt from the epidemic, although single cases had occurred at several points in the parish. On the 8th there was one in the Trinity district, in a man who had recently come from Lucea; and on the 24th a gentleman who had returned from the same place was attacked in Savanna-la-Mar. Nevertheless no other case followed. A considerable number of cases had occurred, too, in the north-east districts of the parish, near the borders of Hanover and St. James; several of these proved fatal, but the disease did not then spread. "The nearer the cholera approaches," writes a resident at the time, "the greater is the panic that seizes "the negroes; and although the estates manage to keep work, they are compelled to pay a rate of wages which the present price of sugar will render "unremunerative. In any event the proprietors will be serious losers."

The comparative immunity of Westmoreland, while every other parish in the island had been so severely afflicted, was by many attributed to the precautionary measure adopted by the Local Board of Health of having established a sort of sanitary cordon at various points of the boundaries of the parish, so as to prevent the entrance of persons from any of the adjoining parishes where the disease was existing. Special constables, as well as the regular police, were employed in this duty by the authority of the custos or principal magistrate. Very summary punishment was inflicted on any who transgressed the order, or attempted to pass the forbidden line; they were well smoked, almost to stifling, besides being soundly thrashed. Letters, too, and newspapers were subjected to thorough fumigation before being admitted. An endeavour was also made to prevent the rural population, living in the high lands in the interior, going down to attend the markets; but this was found to be impracticable of execution. Several vessels had been most needlessly detained for a considerable time in quarantine at Savanna-la-Mar.

The House of Assembly met on the 14th of this month (January), and in two or three days again adjourned, to the 11th of February. One of the members

gave notice of a motion to introduce a Bill to provide for the incidental expenses attendant upon the cholera, but no further notice of the terrible visitation was made.

His Excellency the Governor, in his despatch to Earl Grey of the 11th January, says, "I shall not fail to recommend to the local Legislature, in "accordance with your Lordship's instructions, the adoption of sanitary laws "and of a precautionary system of internal order, as more efficacious than "quarantine."

The chief features of the epidemic in *February* may be said to be its reappearance in several places in which it had for some time nearly or altogether ceased, and its development in others which had hitherto remained free, although the pestilence had been in their immediate neighbourhood. The antecedent and associated circumstances, whether they be casual or not, of these occurrences are not as yet known, nor indeed have they been attentively examined. They form, however, an important point in the history of the pestilence.

In *St. James*, it broke out for the first time in some of the rural districts not far removed from Montego Bay, and in which there had been a good deal of diarrhœa during the prevalence of the cholera in the town two months before. It was during the first and second week of February that the estates of Montpelier, Belmont, Unity Hall, Tower Hill, Spring Garden, Reading, &c., localities previously unscathed, began to suffer. The attack on some of these properties was attributed by the residents to the exhalations from the cholera burial ground, in the neighbourhood of Montego Bay, being wafted towards them when the wind was in a particular direction. The mortality at Montpelier was very great, aggravated, no doubt, by the prostrating influence of the panic which seized the negroes. Being in Montego Bay at the time, an application was made to me by the managers of some of the affected estates, for advice as to the best measures for arresting the ravages of the disease among their labourers. The following is an extract from my letter of reply published in the local newspapers at the time, 17th February:—

"It is in vain that we try to arrest the disease by medical treatment or by "any remedial measure we can adopt, as long as the indoor condition of the "dwellings at night is such as I have attempted to describe. What then is to "be done to mitigate this terrible evil, and thereby to prevent in future the "recurrence of that dreadful sacrifice of life which has already taken place in "the negro houses, in so many districts of the country? I know but of one "plan; and that is to thin the inmates of these houses by removing as many "of them as possible to places where they can have the benefit of fresh un-"tainted air, however imperfect the accommodation in other respects may be "for the time. It has occurred to me that the trash-houses, if not occupied, or "any other large buildings on estates, provided only they be roomy and well-"aired,—such as the curing houses, old barracks, or hospitals, &c.—might be "advantageously made use of for the three or four weeks during which the "influence of the epidemic may continue to be felt. In several places in "England, numbers of people were moved out of their infected dwellings "and camped under tents upon adjoining hills, and invariably with the happiest "results. The same practice, it is well known, has on numerous occasions "been had recourse to with troops both in Jamaica and in other parts of the "world, and always with marked benefit. Might not sheds or temporary huts "be quickly run up in a well-chosen spot for the accommodation of a few "hundred persons, until the breath of the pestilence had passed away from the "district?.....If the plan be adopted, I feel confident that many hundreds "of lives will be saved, should the cholera continue its presence in the island. "The treatment too of those who still remained in their cottages would, at the "same time, be rendered much more easy if they be attacked with the disease, "and the chances of their recovery be greatly enhanced."

The advice was acted upon in a few places, and always with success in preventing or greatly diminishing the otherwise inevitable mortality.

It was in February that the only three cases of the disease which occurred, throughout the visitation, at the mountain garrison of Maroon Town (in St. James), the elevation of which is between two and three thousand feet, took place. The first case was on the 15th, the second on the 17th, and the third on the 18th.

Hanover was the parish where the epidemic now continued to prevail most severely. Lucea was nearly free, but the negro villages of Elgin Town and Johnson's Town on the opposite side of the bay were still a good deal afflicted. In some parts too of the Fish River and of the Green Island districts, numerous deaths occurred. At Cousin's Cave and other points on the coast, the disease had much abated by the middle of February.

In *Trelawny* solitary and sporadic, or slightly congregated, cases continued to occur in different parts. At the beginning of the month, Litchfield estate, only four miles from Falmouth, was visited for the first time. The overseer of Stewart Castle estate, between Falmouth and Duncan Town, was attacked on the 21st; and towards the end of the month, two or three cases occurred in Falmouth, Martha Brae, &c.

As in *St. James's* so in *St. Anne's*, several estates, which had escaped while the pestilence was so virulent eight or nine weeks before, were now attacked. There was also a partial re-appearance of it, at and in the neighbourhood of, Ocho Rios. A like occurrence took place about Port Maria, Orocabessa, and in some parts in the Highgate district of *St. Mary's*. The burial ground at Port Maria was in a dangerous and disgraceful state. In consequence of the heavy rains, some of the graves and trenches had been laid open, and half-decayed corpses were partially exposed.

In *Metcalfe* and *St. George's*, the malignant form of the epidemic existed in one or two districts until about the end of February, when it became replaced by diarrhœa, dysentery, and fever. The adjoining parish of *Portland* was similarly affected. The latest case of cholera in Port Antonio was on the 14th; but several cases occurred at a later date in some of the rural districts, and also in the Manchineal district of *St. Thomas in the East*. The rest of this latter parish was nearly free, with the exception of the Blue Mountain Valley, where it had re-appeared about the 21st. That the morbific poison still lingered in some parts of *St. David's* is shown by the fact that an inspector and several of the police force, as well as some of the resident population, were attacked at Essington in the course of this month. A solitary fatal case occurred at Spanish Town in a man who had come from *St. Thomas in the Vale*, and another at Linstead on the 15th. In all probability, there were others in different parts of that parish of which there was no account. It would indeed seem, from what was observed in the adjoining parish of *St. John's*, that the disease had at no time entirely ceased in some districts from the date of its first development;—cases of a milder type, with occasionally an insulated one of greater malignancy, having continued to occur ever since. This will appear from the course of the epidemic in the district of Luidas Vale, and more particularly upon Worthy Park, where a very accurate record was kept by Mr. Price and Mr. Reid, the proprietor and the manager of this fine estate. The earliest case was on the 15th of November; the second on the 18th. Several persons were attacked on the following day, and after this the disease spread generally, and prevailed for about a fortnight with great severity. There was a lull from the 6th to the 23d of December. The weather during the time was dry and fine. Rains then set in, and the disease re-assumed force. After the 5th of January no fatal case occurred till towards the end of the following month, with the exception of two cases in men who were seized with bowel complaint on the 10th and 11th, and immediately returned to Mount Diabolo in St. Thomas in the Vale, where they both died. Diarrhœa, however, was prevalent in Luidas Vale throughout January and in the early part of February. On the 22d of the latter month, there was a decided case of cholera, and another on the 23d. Both patients recovered. On the 26th three fatal cases occurred, each in different houses, and in labourers working at different places. Two of them had been affected with diarrhœa for a day or two previously. The attacks then became diffused over the district generally, and proved very fatal. From eight to twelve deaths occurred daily for several days, in the first week or two of March. The disease was of an extremely malignant type; two thirds at least of those attacked died. There was no medical man near. "There are," says Mr. Price, "in fact from 20,000 to 25,000 souls scattered over a run "of country of above a thousand square miles, on which there is neither "doctor, nor, I believe, dispensary." Medical aid was at length procured, mainly through the liberality of Mr. Price.

The circumstances connected with the fatal case of Mr. Thorburn, the mana-

ger of Thetford estate immediately adjoining to Worthy Park, are worthy of notice. The details are instructive in several points of view. For two or three days before the 8th of March, when the malignant symptoms commenced, he had been affected with diarrhœa, and had exposed himself at night in the cane fields around the house. His mind, like that of all who had charge of sugar properties, was much harassed from the difficulty of procuring labour for the care of the land. Notwithstanding the want of medical assistance, he rallied from the choleraic attack, but secondary fever ensued, and he sunk on the 14th. Mr. Thorburn was not the only person attacked at the time. On the 8th, a man living in the house, and other two persons occupying one of the outhouses in the yard, were seized. They all recovered. On the 11th, a fatal case occurred in the yard, and another man was attacked. He went home some miles off, and died there. During Mr. Thorburn's illness, one of the book-keepers also was affected with diarrhœa. The Reverend Mr. Steer, who had been in attendance upon his brother-in-law for two or three days, but never slept in the house, returned to his home in St. Thomas in the Vale on the 12th. He was then slightly inconvenienced with bowel complaint. On the 14th, malignant symptoms set in, but they subsequently abated under medical treatment, and he continued to improve until the 19th, when secondary fever commenced. He was in a fair way of recovery, when, on the 23d, he insisted on being moved from his own house to another some distance off. The fatigue was too great, and he died a day or two afterwards. No member of his family or household became at all affected, with the exception of a little negro girl who had never been in attendance upon him ; she was attacked during his illness and died. There had been no case of cholera in the district for several weeks previously.

There were numerous causes of insalubrity in and around Mr. Thorburn's house, the natural situation of which is by no means objectionable. In particular, the yard in the rear was (when I visited the place on the 22d) in a most filthy condition, littered over up to the walls of the house with the excrement of pigs, goats, and dogs. At the bottom of it was a stagnant pond or ditch, which received and detained much of the foul drainage of the yard. The rooms in the house were very insufficiently ventilated ; and the outhouses were, as usual, without any means of aeration when their doors were closed at night.

In other parishes besides St. John's, there was a partial re-appearance or recrudescence of cholera during March—as in the neighbourhood of Morant Bay, especially in the Blue Mountain Valley, at the south-east extremity of the island ; and in the Flint River district, about Sandy Bay, Magotty, and some inland districts of Hanover at the north-west extremity. Cases still continued to occur in Montego Bay, and on several of the adjoining estates. In that town " there was," says a local journalist, "a marked adherence of the disease to " localities in the selection of its victims." Bowel complaints were almost always very prevalent wherever sporadic cases of cholera took place. In *Trelawny*, too, occasional attacks still occurred at Martha Brae and other places near Falmouth. On one neighbouring estate, hitherto exempt, the disease appeared for the first time at the beginning of this month.

In *April* it had all but ceased in every parish of the island, with the exception of Hanover, where it continued to linger during the early part of the month in some districts, more particularly in those of Fish River and Green Island. At the negro settlement of Phœnix Town in the former, it proved very fatal. A few cases now and then occurred in the immediate neighbourhood of Lucea, and in some of the more inland districts towards the borders of the parish and those of Westmoreland. On the estates of Magotty and Hopewell, &c., between Lucea and Montego Bay, it ceased about the middle of the month, having caused the loss of a considerable number of people, and the most dreadful consternation.

During the latter half of April there seemed to be a lull of the pestilence everywhere, after having prevailed six months from its first appearance in the island. The weather was generally dry and fine.

In this as in the preceding month there were alarms, on more than one occasion, that the epidemic had extended to *Westmoreland;* and statements professing to give not only an account of the numbers attacked and of the localities where they lived, but minute particulars as to the manner in which the disease had been introduced, appeared in the public newspapers. They turned out to be quite groundless. The cordon was still kept up, to the no small

inconvenience of most of the people, along the boundary line between the parish and Hanover; and, to this precautionary measure, the immunity of the former was still confidently ascribed by the Local Board of Health. Some, however, less credulous than the majority, were full of apprehension that the visitation, long withheld, was now (about the end of April) creeping steadily from different points towards Westmoreland. There was, moreover, a good deal of fever and bowel complaints—which were sometimes very obstinate and severe—in the parish, more particularly in the mountainous districts near the borders of Hanover.

Chickenpox prevailed about this time, to a considerable extent, not only in Kingston, but in various parts of the island. This disease is not unfrequent in Jamaica, and is sometimes so severe as to leave slight pittings on the surface.

During MAY, *Hanover* continued to be the only portion of the island to which the cholera clung with tenacity. It still lingered on the sea coast eastward of Lucea, as at Tryall near Sandy Bay, and around Flint River and Sandy Bay, on one or two estates a few miles inland from the town; also in the Green Island and Fish River districts; and every now and then cases of a suspicious nature manifested themselves in Lucea itself. At the beginning of the month, it broke out with severity in the wide district which comprises Pondside, Great Valley, Mountain Valley, Cascade, Retreat, &c. The weather at the time and throughout the entire month was extremely wet, both in Hanover and Westmoreland. The rivers had overflowed their banks, and large tracts of country were under water. It was towards the end of May that it became evident that the enemy, which had been so long hovering about the borders between the two parishes, was beginning to make its fatal incursion into the latter, notwithstanding the protracted endeavours to keep it out mechanically. Very nearly about the same time cases occurred in different and distinct localities, having no direct communication with each other, as at Flamstead, Glasgow and its neighbourhood, near the boundary line with Hanover, at Morgan's Bridge and Bellisle in the middle of the parish, in the Paul Island district, and in the Trinity District, leaving the intermediate localities uninfected. Diarrhœa had been prevalent in most of these places, for a week or two before the first cases of developed cholera. The attacks rapidly multiplied, and it was soon too obvious that the pestilence was spreading itself over the parish. The earliest case on Mesopotamia estate was at the very beginning of June. Great loss of life ensued subsequently. Savanna-la-Mar had as yet escaped; but bowel complaints had begun to be general. It was about the beginning of the second week of the month that the earliest fatal case took place in the town, but the disease did not exhibit a tendency to epidemic diffusion for another week or so; then it very quickly spread, and in a most deadly form. Scarcely a single case recovered; medical treatment seemed to be of no avail. In the upper part of the town, in what is called the Dunbar River locality, it raged with extreme violence. The weather continued to be excessively wet, the rain pouring down with little intermission for several days together. It was all but impracticable for the medical men to reach the wretched hovels of the people in the rural districts. The roads were scarcely passable. While the disease was increasing from week to week, both in extent and fatality, the Local Board of Health of the parish was the scene of angry disputes among the members; and vehement opposition was offered by some of the resident proprietors to the removal of the sick to buildings near their estates, and even open threats made that, if the attempt were made, the patients would be smoked and the buildings burned down to the ground. This was of course one of the natural consequences of the doctrine of contagion which had been so industriously impressed, upon the people of the parish, by the proceedings of the last six months. At the end of June nearly 100 victims had fallen to the scourge in Savanna-la-Mar, and the disease had not then reached its acme. The proportion of recoveries was extremely small. On the 25th Mr. B———, a clergyman, with his family, left the port on board a small vessel for Kingston. From opposing winds, they were unable to proceed little more than half way. They were obliged to put back to Savanna-la-Mar, which they reached on the 3d of July, when it was found that Mrs. B., her mother, and one of her children, as well as a daughter of the master of the drogher, had died from cholera, and that Mr. B. lay on board in a dangerous condition.

June was characterised not only by the outbreak of the epidemic in *Westmoreland* for the first time, but by its re-appearance in other parts of the island.

It still clung to those districts in *Hanover* which had been so long under its influence, as around Sandy Bay and in the Green Island and Fish River districts; and it had again made its appearance in the negro settlement of Elgin Town and other localities near to Lucea, as well as on several estates to leeward of the town. In the parishes of *St. James*, *Trelawny*, *St. Mary*, and *St. Thomas in the East* sporadic cases of cholera and choleraic diarrhœa manifested themselves in different districts. But the most remarkable development of the disease, during this month, took place at Up Park Camp among the soldiers of the 3d West India Regiment, recently arrived from Demerara. A special notice of this outbreak will afterwards be given. About the same time isolated cases, several fatal, occurred in and about Kingston, and in one or two vessels in the harbour; there was also a remarkable prevalence of choleraic cholic and diarrhœa among the prisoners in the penitentiary. Bowel complaints were frequent in the town and the neighbourhood. A solitary case took place on the 24th in Spanish Town, in a house where three deaths had occurred during the epidemic in November last. It is to be remembered that the early rains fall towards the end of May.

At the beginning of *July*, the pestilence continued to rage at Savanna-la-Mar and in many of the rural districts of *Westmoreland*. It reached its acme in that town on the 10th and 11th, the mortality then amounting to thirty-five in twenty-four hours. After the 15th it decreased rapidly, and had almost entirely ceased by the 23d; it continued, however, to prove exceedingly destructive in many of the agricultural districts both to windward and leeward of the town, as well as in the interior of the parish, more particularly near the borders of St. James and along the course of the Great River.

The total mortality in Savanna-la-Mar amounted to between a fourth and a fifth of the whole population, estimated at about 1,500. The weekly progression of the mortality is shown below:

From June	7 to 14	4	From July	1 to 7	65
„	14 to 21	29	„	7 to 14	118
„	21 to 28	30	„	14 to 21	48
„	28 to 30	35			231
		98			98
				Total	329

It was always anticipated that if the cholera reached this town, it would prove very destructive; its situation being on a low flat, with an extensive morass, which communicates with the sea, close upon it. Many of the inferior houses are built right on the swampy ground, and there is of course much filth both within and around them. There is also a great amount of rank bush vegetation in the upper part of the town, much more indeed than there used to be in former years. The consequence has been that this part has become decidedly more unhealthy. The supply of water in the town is very defective.

During July the disease, besides continuing in those parts of *Hanover* where it had been lingering so long, partially re-appeared on several estates in the Plantain Garden River and Manchineal districts in *St. Thomas in the East;* also in some parts of *Portland*, and with great severity in the Hope Bay and Swift River districts of *St. George's*, while in other parts of this latter parish diarrhœa had become exceedingly prevalent.

In Kingston sporadic cases of cholera continued, every now and then, to occur. Two well-marked cases were admitted during the first week of July into the public hospital, one from a vessel in the harbour, and another in a patient who had been eating a quantity of the fruit of the guenep tree.

Throughout the present month, there was a general epidemic of *influenza* in almost every part of the island. Many of the cases in Kingston and Spanish Town were of a severe character, and several proved fatal. The disease usually set in with intense headache, and with such powerlessness in the limbs that the patients imagined that they were about to be seized with a fit or a stroke of the palsy; the prostration was extreme. Occasionally the stomach and bowels were excessively irritable, while in other cases the bronchitic symptoms were alarming. Not a parish escaped. In Dorothy, Clarendon, and Manchester it was particularly rife during July, entire households being disabled at the same

time. The north side of the island suffered most severely in the following month. In many of its features it resembled the "dengue" or dandy fever, which prevailed to so great an extent over the West Indies in 1827. Occasionally it proved seriously fatal among the lower classes, where the utter want of medical assistance was severely felt. Cuba, as well as many other of the West India islands, had been visited by the epidemic while it was prevalent in Jamaica.

It was in July that the earliest cases of *smallpox* occurred in the parish of Trelawny, from which the disease eventually spread over almost every part of the island, causing a great sacrifice of life. It continues up to the present time. The circumstances connected with its development will be stated in the sequel.

In *August* occurred the remarkable outbreak of cholera among the troops, lately arrived from Europe, at the mountain station of Newcastle; this forms one of the most instructive episodes in the history of the epidemic in Jamaica. It appeared also in other elevated districts in the St. Andrew's mountains, as at Middleton, Chester Vale, Mount Lebanon, and also in some of the mountain properties in the parish of St. George to the northward. Several cases occurred likewise at Gordon Town and other localities nearer the plains. A death occurred in the Female Penitentiary at Halfway Tree on the 15th, and one at Up Park Camp on the 22d, in a black soldier lately arrived from Sierra Leone. In Kingston also a good many cases occurred, several proving fatal. With the exception of the Negril district, which had not been invaded hitherto, the parish of Westmoreland was nearly free towards the middle of the month; but about the end of it cases began to re-appear in the suburbs and neighbourhood of Savanna-la-Mar, after a lull of a few weeks. It still lingered in some districts in Hanover; nor were St. James and Trelawny entirely exempt, occasional seizures having taken place in both parishes.

Throughout August influenza was exceedingly prevalent in many districts of the island, particularly on the north side. The weather had been extremely wet in St. James and other parishes there.

During the first half of *September* there was an increase in the number of cases in Savanna-la-Mar, as well as in many of the rural parts of Westmoreland, after the very heavy rains. In the latter half, several persons were attacked in Montego Bay; the cases occurring in the very same part of the town, Meagre Bay, where the disease first manifested itself ten months before. Diarrhœa and other forms of intestinal disease were prevalent in many of the inland parts of St. James and Hanover.

It was not until the latter half of *October* and beginning of November that any decided exacerbation took place in those districts where the disease had been lingering so long, more particularly in the Green Island district in Hanover, and around Montego Bay, and along the course of the Great River in St. James. It was generally believed that the continued wet weather, followed by intense heat, had something to do with it. The number of deaths in the latter parish alone was estimated at between two and three hundred, at least. Several parts of Westmoreland also suffered a good deal throughout November.

In *December*, the parishes of St. James, Hanover, and Westmoreland were still the chief, or all but the only, seats of the disease. In Trelawny, besides the smallpox, which by this time had fairly begun to manifest itself as an epidemic, there was in many parts a great deal of diarrhœa, and a good many cases of cholera also had occurred. The south side of the island and the eastern half were quite free.

Throughout *January* and *February* (1852), it continued to linger in some of the inland districts of the above parishes. In *March*, it had all but disappeared; and by the end of that month it seems to have entirely ceased in every part of the island, after a duration of nearly 18 months, to be followed unhappily by another formidable epidemic, which was always more dreaded, and against the incursions of which as few timely precautions had been taken. Associated with the smallpox has been a wide-spread epidemic of measles.

The entire mortality from the cholera throughout the island may be estimated at *between 40 and 50,000* at least, out of a population which has generally been *considered to be about 400,000*. The country was therefore more than decimated of its inhabitants; and if we suppose that every second person attacked died,

it will be thus seen that a full fifth of them were struck with the severe form of the disease, independently of the prodigious amount of diarrhœa, &c. among the remaining four fifths. Little wonder then that the industrial labour of the colony has been prostrated, that the price of labour has risen immensely, that the remuneration of production has correspondingly fallen, that very many estates have been abandoned in consequence, and that a deep and general gloom hangs over the prospects of the land.

As an example of the destruction of life among the peasantry over a large sugar growing district, the most productive in the island, I give here a table of mortality in divisions No. 2 and 3 of the parish of St. Thomas in the East up to the beginning of 1851. There were occasional and partial re-appearances of the disease subsequently.

Bath District.	Deaths.	Plantain Garden River District.	Deaths.
Bath, town, population 600	58	Bowden	26
The Rhine estate	11	Old and New Pera, Barking Lodge and Springfield	128
Plantain Garden River estate	38	Rocky Point, Chiswick, and Chapel Hill	72
Friendship	30	Dalvey	85
Potosi	12	Hampton Court and Duckenfield	94
Airy Castle and Grossett	144	Holland Bay	24
Ginger Hall	26	Holland Estate	150
Sunny Hill and Thornton	42	Amity Hall	40
Mount Stewart	24	Hoadley	25
Mount Felix	31	Wheelerfield	35
Cotton Tree Mountain	11	Bachelor's Hall	1
Scotland	2	Golden Grove	185
Port Morant	55	Winchester	65
Cardiff	2	Airmount	8
Leith Hall	24	Arcadia Land	39
Clifton Hill	31	Philipsfield	41
Harbour Head	68	Pleasant Hill	27
Harbour Head Land, Richmond Hill, and Belmont	29	Stokes Hall, and Free Land	25
	638		1,070
		Brought forward	638
		Total	1,708

Entire population of the two districts estimated at about 8,000.

I now proceed to give special descriptions of the principal towns, with particulars of the visitation in each. It will then be seen more distinctly how much the virulence and fatality of the disease were increased by the influence of local condition and other causes, all of which are, obviously, more or less controllable by human agency.

1. Port Royal is situated at the extremity of a narrow and irregular reef-like spit or tongue of land which stretches for ten or twelve miles from the shore, and forms a natural breakwater to the harbour of Kingston, that would otherwise be an open roadstead. This long sandy projection is in no part much above the level of the sea, which dashes over it during strong winds at different points. It is generally known by the name of the Palisades. The only vegetation to be seen consists of clumps of low mangrove bushes, nor is there any building upon it except at the extreme point where the town stands. Little more than half a mile from this point, there is a good deal of swampy ground; and here it is that the burial place of Port Royal, where so many thousands and tens of thousands have been laid, is situated. The graves cannot of course be dug deeper than two or three feet, and even at that depth they are generally filled with water. Being in an E.N.E. direction from the town, the emanations from this spot are not carried towards it by the regular land and sea breezes. It is only when a particular wind called the rockwind is blowing, that they are apt to be so. Before and during the prevalence of the cholera, the winds were so shifting and irregular that the effluvia not only from the direction of the burial ground but also from the opposite shore of the mouth of the harbour, where there is much swampy land, may possibly have served to increase the then existing unwholesome condition of the atmosphere.

But it needed no extrinsic source of contamination to account for the virulence of any pestilential disease in Port Royal. The following graphic description of the place by Dr. Wingate Johnston, Deputy Inspector of Fleets, &c., in the Report of the Central Board of Health, will enable the reader to judge of its present state:—

"The town of Port Royal does not cover any great extent of ground. It is "traversed by five moderately wide streets, which run nearly parallel to each "other in an E.N.E. and W.S.W. direction. These streets are again intersected "by numerous narrow lanes, which run generally at right angles from the "before-mentioned streets, between which lanes are situated square blocks of "ill-ventilated filthy hovels, the majority of them undeserving the name of a "house. Many of them contain only one apartment, in which five or six human "beings are to be found huddled together in a space of little more than about "double as many square feet, without any domestic conveniences; the floors "are generally earthen, dirty, and damp, more like cellars than human "habitations.

"Most of the houses have small court-yards attached to them, which are "generally the abode of pigs and goats, and are also invariably the depositories "of every species of disgusting filth, such as human ordure as well as other "excrementitious matters, stinking fish-guts, and putrid slops; in fact every-"thing is there to be found excepting cleanliness or pure water. The stench "perceivable in the vicinity of some of these localities is at times intolerable. "The few inhabitants, that do observe anything like decency (there being no "public privies), generally resort to the beach facing the sea in front of the "battery in the vicinity of the church. About this spot the nightsoil is also "generally deposited. When the sea breeze blows home, this place is directly "to windward of the town; and there can be no doubt that the exhalations "arising from the filthy stinking accumulations must have a direct effect in "lowering the standard of health, and also in predisposing to epidemic attacks. "We need not therefore be at all astonished that, at the town of Port Royal, "cholera assumed a degree of virulence unknown in more cleanly localities."

The population consists chiefly of boatmen, fishermen, bumboat and washer-women, and of artisans and workmen employed in the dockyard. There is always a great deal of idleness and low vicious dissipation, as in all seaport towns.

The only supply of fresh water for the inhabitants is obtained as a favour from the dockyard and barracks, all the water being brought in vessels from Rock Fort for the use of the public service. The supply is of course stinted, and utterly insufficient for the purposes of cleanliness.

As none of the streets are paved or macadamized, whatever rain falls on the surface sinks into the loose sandy soil, which, being bestrewed and impregnated with filth, is at all times little better than a foul sponge. In close hot weather the exhalations from the ground are often positively fetid. And here I cannot but remark that the quarters, which have hitherto been assigned to the assistant surgeons of the naval hospital, have always been so notoriously unhealthy that very few who have resided there have escaped severe illness, and the proportion of deaths among these officers has been unusually large. It is no wonder. Independently of the obvious mal-construction of the building itself, the horrible effluvia from the abominations on the surface immediately outside of it are such, that the windows of the mess and sleeping rooms can frequently not be opened. I strongly suspect that had it not been for the considerate kindness of Dr. Johnston, in permitting the assistant surgeons to occupy good airy quarters in the hospital, more than one of them must have fallen a sacrifice to the late epidemic. Such a state of things is really too bad, and the more so as official complaints have been repeatedly addressed to the Admiralty on the subject.

More than twelve months before the appearance of the cholera at Port Royal, the Earl of Dundonald, then admiral of the West India station, had deemed it his duty to call the attention of the Admiralty to the foul condition of the town as influencing the health of the patients in the naval hospital; and in a letter subsequently addressed by him to the mayor of Kingston he remarked, "never "have I seen in the whole course of my life a place so disgustingly filthy, or "which could give so bad an opinion to foreigners, as the town of Port Royal." He had then pointed out the very spot where he felt confident that, if cholera

or any other malignant epidemic should show itself, it would rage with the greatest fury. The prediction was verified to the letter. Most of the hovels which stood there had been pulled down, when I visited the spot.

So thoroughly bad is the whole town, that his Excellency the Governor, in a despatch to Earl Grey (11th November 1850), suggests its entire re-construction: "It would educe good out of evil if either Her Majesty's Government, "or the local Legislature of the colony, were to seize this opportunity of "buying up the whole site of Port Royal, and of forming a wholesome town "at the entrance of one of the finest and most important harbours in the "world. I do not think the whole of the tenements and land would sell at "auction for so much as 10,000*l*."

The first case of cholera at Port Royal occurred during the night of the 6th October, in a black woman 50 years of age, (Nanny Johnston by name,) living in a filthy hovel close to the beach, where there is always a great amount of decaying refuse lying about. The rector, the Reverend Mr. Hall, regarded the spot as one of the filthiest and worst parts of the town. She had had an attack of severe bowel complaint a month before, but had recovered. Diarrhœa was not prevalent in the town previous to her seizure, but became so almost cotemporaneously. When first seen next morning by Mr. Watson, the surgeon of the naval hospital, he at once recognized the true nature of the disease. The woman died that afternoon. During the night of the 7th and on the 8th, two other persons in the same yard were attacked. Both died in the course of a few hours. Cases began to show themselves in different parts of the town, and rapidly multiplied. One of the earliest was that of a poor man who was found dead in a cellar. He had been seen by no one; but Mr. Watson had no doubt, from the appearances on dissection, that he had fallen a victim to the pestilence. Within a week from the first case upwards of 30 deaths had taken place, all of them among the very lowest class of the people. The other inmates in Nanny Johnston's house were not attacked for 10 days or a fortnight after her death. The malignancy of the disease was extreme; many of the cases proving fatal in from four to six hours from the moment of seizure. Fatal collapse often supervened with scarcely any previous evacuations. The following table of mortality among the population, (estimated at between 900 and 1,000) exclusive of what took place among the troops and seamen, was furnished me by the rector:—

Deaths from cholera in the town of Port Royal, 1850.

October	8	- -	3	October	30	- -	6
,,	9	- -	1	,,	31	- -	9
,,	10	- -	3	November	1	- -	5
,,	11	- -	7	,,	2	- -	5
,,	12	- -	6	,,	3	- -	2
,,	13	- -	5	,,	4	- -	7
,,	14	- -	7	,,	5	- -	5
,,	15	- -	8	,,	6	- -	2
,,	16	- -	9	,,	7	- -	2
,,	17	- -	8	,,	8	- -	2
,,	18	- -	14	,,	9	- -	0
,,	19	- -	12	,,	10	- -	1
,,	20	- -	16	,,	11	- -	3
,,	21	- -	14	,,	12	- -	1
,,	22	- -	13	,,	13	- -	1
,,	23	- -	9	,,	14	- -	0
,,	24	- -	8	,,	15	- -	1
,,	25	- -	12	,,	16	- -	1
,,	26	- -	17	,,	17	- -	1
,,	27	- -	9				
,,	28	- -	7				54
,,	29	- -	17				205
			205		Total	-	259

There was no civil practitioner resident in Port Royal at the outbreak of the pestilence, and the whole fatigue of attendance on the sick fell upon the medical officers of the navy, and on Dr. Walshe of the Royal Artillery, until

the duties of these gentlemen in their respective hospitals entirely absorbed their time. Dr. Babington of Her Majesty's ship "Imaum" was appointed by Commodore Bennett to give his services to the unfortunate sufferers in the town. He was afterwards relieved by Dr. Allen of Manchineal, whose aid the parochial authorities had engaged. Dr. Babington had occasion to remonstrate with them, not only upon the dreadfully disgusting state of the town, but also on the dangerous consequences of the insufficient interment of the dead at the Palisades. "Within the last three weeks more than three hundred human "bodies have been deposited there, some of them not more than one foot "below the surface, in a loose shifting soil composed of shingle and fine "sand, which only requires a strong sea breeze or heavy fall of rain to remove "the light superstructure and expose the coffins. From so large an amount of "putridity, the most noxious and pestiferous gases are now being exhaled and "diffused through the atmosphere."

Notwithstanding the terrible mortality among the lower and sub-middling classes in Port Royal, no death occurred among the well housed and well fed. "The disease," says Mr. Watson, "nearly exhausted itself here in less than a "month from the date of its first appearance. Nine medical officers were "assiduously employed for that space of time, day and night, attending to "the sick in the fetid hovels of the town and in the hospitals, not one of "whom was seized. There is here a small respectable community belonging "to the church, the navy, and the army, who, with their families, are placed in "circumstances favourable to health. Not one of them has taken cholera, nor "any member of their families."

It is of importance that the circumstances connected with the first case in Port Royal should be made known, as it continued to be believed by many persons, among whom were most of the members of the Privy Council, that it might be traced to one of the American steamers from Chagres, although this opinion was altogether at variance with that of all the medical gentlemen who had inquired into its history. Even the very parties who had introduced the disease, and the exact channel of its transmission, were confidently named. The facts are these. Cholera had prevailed to a considerable extent at Chagres in August and at the beginning of September. The American steamers, plying between that port and New York, touched at Kingston for the purpose of coaling and landing passengers. On the 27th of September, two young men, negro fishermen, of the name of Prawle, arrived by the "Cherokee" at Port Royal. Their father had died at Chagres on the 14th, after a short illness, with symptoms which they thought to resemble those of cholera. No doctor had seen him. The two sons, who were living at the time in the same hut with old Prawle, remained quite well, with the exception of slight aguish symptoms. They left Chagres on the 24th, bringing a bundle of their father's clothes. One of them suffered from sea sickness, and his bowels were somewhat relaxed during the voyage; but the relaxation ceased upon taking a few lavender drops on sugar. Both youths were seen upon reaching Port Royal by Mr. Watson, who has stated: "They laboured under common intermittent fever on their "debarkation, for which I attended them, and they were soon restored to "perfect health, after taking some doses of quinine." Neither of them, nor their mother, who had received her husband's clothes and had worn some of them, were attacked with cholera; and it may be worth noting that no case of the disease occurred either in their house, or in the adjoining house on each side, during the whole epidemic at Port Royal. These three houses are standing in a yard by themselves, and are separated by one if not two streets from the place where Nanny Johnston lived. It was said that she had washed their clothes; but this story was found on inquiry not to be the case; nor had she seen them. The woman, who really did wash their clothes, was not attacked for a fortnight after the disease was fairly in the town. In short, there is not the slightest foundation for the rumour that had got afloat about Nanny Johnston. From her daughter's evidence, it appeared that she was at all times a hard-working woman; that she had had a bad bowel complaint a month or six weeks before; that for some time afterwards she had been unable to work; that on the third of October she received from the officers of Her Majesty's schooner "Bermuda" a quantity of linen to wash; that she never went on board any of the American steamers, and never had done any washing for them; that on the

4th and 5th she was busy washing in the sun; that on the 6th, being a Sunday, she did not work; and that she was taken ill on the evening of that day.

It is worthy of notice that no case of cholera occurred, at any time, on board the American steamers between Chagres and Jamaica, although they were often crowded with emigrant passengers. Those vessels are provided with surgeons, and therefore reliable information was obtained. In the case of the "Empire City," it appears that a man was brought on board at Chagres on the 26th September, with symptoms like those of cholera, and that he died on the following day. The body was taken on shore and buried, and all his clothes were sent out of the ship at the same time. The cabin which he had occupied was immediately cleansed and fumigated, and taken possession of by the surgeon himself, who slept in it during the voyage. Neither he, nor any one on board, had the slightest symptom of bowel complaint.

The only instance of a genuine case of cholera occurring in these vessels was on board the "Crescent City," after leaving Kingston for New York on the 13th October, when the disease had appeared in the former place. The patient died, but none of the other passengers nor any of the crew sickened. He had been ashore at Kingston one night while the steamer lay there, and had committed some excesses.

Such is an exact statement of all the facts conected with the appearance of the cholera at Port Royal, as ascertained by Mr. Watson, and Drs. Chamberlaine and Walshe, the health officers of the port. The subject will again come under notice, when I have to consider the quarantine laws and practice of this island.

II. The town of *Kingston* stands upon an inclined plane, rising at a considerable angle from the harbour to a beautiful plateau, which extends with a slight ascent in a northerly direction to Up Park Camp, and thence on to the foot of the St. Andrew's Mountains. To the west there is much waste and swampy ground, while on the east or windward side the country is, for some miles at least, comparatively free from this source of insalubrity. The town is of an irregularly quadrangular shape, and its general plan or distribution is on the whole good. It covers an acre of nearly two square miles. The main streets run due north and south, and are crossed by others from east to west. They are of ample width, and even the lanes interposed between the longitudinal wide streets are not nearly so narrow as in most other towns, nor are they ever tortuous and irregular. On the whole, the sea and land breezes sweep along almost every part with but little interruption.

It is only in the lower or business part of the town that the streets are occupied with continuous buildings. In its upper part, except in some of the lanes, these are usually detached, and surrounded with court-yards or plots of garden ground.

There is a large open quadrangle in the middle of the town, capable of being made a most refreshing place of recreation to the people, but hitherto neglected and uninclosed. It is known as the Parade. At its north-west corner stand the Kingston barracks.

From the inclined site on which the city stands, and the slope of the ground stretching from its upper part to the mountains on the north, the heavy rains in May and October come along with great force, and form large streams rushing on to the sea. Part finds its way by broken irregular channels into the gullies on the east and west side of the town; but these being quite insufficient for its discharge, much of it pours down the steep streets, and, swelled by the currents from the side thoroughfares, from the court-yards of houses, &c., the water at length forms a broad continuous muddy stream many inches or even a foot or more in depth, and occupying their entire width from side to side. As none of the streets are paved, nor even any artificial channels for the water have been formed, and the soil being generally loose and sandy, their surface has become ploughed up with deep ruts and broken hollows; while, from the quantity of gravel, stones, and bricks strewed about, they present more the appearance of river courses than of streets in an inhabited city. The amount too of vegetable refuse and other rubbish brought down by the current, and lodged at the bottom of the streets near the harbour, is usually considerable; and as the lower classes generally avail themselves of such an opportunity of casting

out much of the accumulated filth of their dwellings and yards, such deposits become on exposure to the sun very noxious and offensive to those who occupy premises near the shore. This is one cause of the unwholesomeness of many of the wharves there. When I was in Kingston, the ordnance authorities had occasion to remonstrate with the mayor upon the nuisance from this source to their offices.

As there is scarcely any fall from the lower part of the streets to the harbour, much of the surface water there sinks of course into the porous ground; and therefore, partly from this cause, and in part from the infiltration of the sea, brackish water may in general be found at the depth of only a few feet. This water if drank is very apt to produce diarrhœa.

Should there be any obstruction to the free passage of the rain streams, the land all round becomes overflowed, and converted into a wide pool or marsh. This was the case at the west end of Harbour Street for some time before the appearance of the cholera; and repeated applications had been made by the merchants, having premises in that quarter, to the corporation for steps to be taken to get rid of the accumulated water, "which stops public communication, and seriously injures health." The dangerous nuisance continued unremedied for some time afterwards.

From the cross streets not being subjected to the periodic downward washings, their condition is in most respects still worse. Most of them are like neglected broken roads, flanked by decayed filthy buildings, and littered over with rubbish. They are so uneven, with deep hollows here and irregular risings there, that it is scarcely safe to drive along them. The springs of carriages are continually being broken by the violent joltings to which they are exposed, and the stranger who ventures out after sunset finds himself ankle deep in loose sand or in miry slush, and runs the risk of very awkward and even dangerous tumbles, as he seeks to pick his way along the unlighted streets. There are no continuous footpaths in almost any part of the town, and the risk to the pedestrian is not a little increased by the projecting flights of steps, and by the loose bricks and other débris of walls and buildings which have become dilapidated.

But these are only, so to speak, mechanical evils. The amount of abominations upon the surface at all times is almost incredible. The mere quantity of fruit and vegetable refuse in every direction, continually undergoing decomposition, would be enough to charge the air with hurtful vapours, even if there were no other materials of unwholesomeness present. But, in truth, there is no nastiness or pollution that is not mixed up with them. The usual way of getting rid of pail slops, chamber vessel contents, &c., is by tossing them into the street before the door or into the lane at the side; ashes and other domestic rubbish are generally thrown out at the same time. The accumulation in many parts is such as to form a midden on one side of the thoroughfare. Then too the surface drainings from filthy court-yards, foul stables, and fouler pigsties, oozing out from openings in the wall near the ground, flow down the side declivities of the streets in lengthened gutters of filth, until they stagnate in the hollows in the middle. Lean mangy hogs are to be seen at all times rolling themselves about in these vile puddles, while others are wandering here and there, grubbing up the rubbish for food, and bestrewing the surface with their ordure. Besides the numerous swine that are, contrary to an express city ordinance, permitted to be moving about, Kingston has always been noted for its number of half-starved dogs. It is no uncommon thing to see the carcase of one of these unfortunate brutes lying in the middle of a street with a troop of the vulture crows, which are ever wheeling about the city, tearing it to pieces, while the air all around is tainted with the most putrid effluvia.

Altogether, the stranger on first landing in Kingston, especially if he has come from any of the Spanish or other foreign islands, can scarcely believe that he is in the metropolis of the chief of the British West India colonies. Yet an annual charge of many hundred pounds appears in the expenditure of the city, for "repairing streets and removing nuisances." The money is jobbed away. A few years ago, between four and five thousand pounds were laid out on one street alone; at present, it is little better than the others.

But, as if all the above nuisances were not sufficient to contaminate the air of this most neglected town, there is another source of pollution requiring special notice, inasmuch as it indicates a doubly disgraceful evil such as perhaps can

scarcely be paralleled in any other country. I allude to the quantities of rotten salt fish and half putrid pork openly displayed, in spite of prohibitory laws, for sale in the streets. So horribly offensive are the effluvia from this cause in certain filthy localities,—the worst are about the west ends of Bourden and White streets and parts of Princes street,—that the stench from the abominations on the surface is overpowered by that from these articles of food! It is to this nuisance that the editor of the Jamaica Physical Journal, writing twenty years ago, alludes: "The abominable stench created when Princes street is flooded, "bringing with it all the filth from the shops in the upper part, is unbearable, "and can hardly be conceived unless by those who are situated in the lower "part."

The state of the markets must be classed among the great nuisances of the town. From the want of efficient supervision, there is very generally much refuse of different sorts lying about. This is more especially the case at Sollas Market, at the west side of the Parade. The quantity of litter that is partly washed down, and partly detained in the lanes leading from this market in the direction of the harbour, adds not a little to their other causes of unwholesomeness. In the immediate neighbourhood of this market too there is another pollution connected with the barracks, which has long been complained of by the inhabitants of Kingston, and the continuance of which from year to year is very discreditable to the military service. I shall have occasion to refer to it more particularly afterwards.

It need scarcely be said that there has been no systematic scavenging in Kingston for many years; nor indeed is this easily practicable, in the present condition of its unpaved and unmacadamized streets. Even in its days of prosperity it was a notoriously filthy town, as attested at the close of last century by Dr. Lempriere, who mentions, among other nuisances arising from slovenly neglect, a practice then common, and still resorted to, of filling up the hollows of the streets with stable dung and other dunghill sweepings. The badness of the roads, with the consequent difficulty of removing rubbish, has thus been a cause as well as an effect of this disgusting practice. Of late years, most of the solid stable refuse from the better description of houses is cast into the nearest gullies or watercourses, or it is carted away and deposited on the surface immediately to the west of the town. The road, leading from the Spanish Town Road to the railway station, is now in consequence quite impassable; it has become a lengthened dungheap. The amount, indeed, of dungheap deposit at the west side of Kingston is enormous, the accumulation having been going on with successive additions for the last century at least. In West Street there is one huge hillock of the kind, which has oftener than once been declared by the grand jury to be a public nuisance, and the effluvia from which, especially after rain, poison the atmosphere all around. Whenever the wind is at all from the westward, the malaria from it, as well as from the swampy land in that direction, is of course driven right upon the town.

To the best of my knowledge, there is not a single underground drain or sewer in any part of Kingston.

The numerous burial grounds in and around Kingston cannot but be another fruitful cause of atmospheric contamination, pernicious to health at all times, and doubly mischievous in epidemic seasons. Nowhere has the bad practice of separate and divided graveyards been carried to a greater extent than there; they exist in all directions, and some of them are in the heart of the city. In the autumn of 1849 a petition on the subject was addressed by the corporation to the House of Assembly, and evidence taken before a committee. Dr. Stewart, the rector of Kingston, then stated: "The burial grounds "are full, with the exception of a small space in the west ground which is "being used for the inhabitants of Kingston. Graves are being constantly "re-opened for the burial of strangers, and of those from the hospital and "penitentiary. The effluvium arising in consequence has been very great. "During the performance of the service, on one occasion, I became exceedingly "unwell from the effluvium from a re-opened grave. . . . . The effluvium "arising from the west ground is, after rain, very offensive, and must be "injurious, I think, to the inhabitants in that neighbourhood, and to the city "generally, if the wind be from the west." "I am quite convinced," added Dr. Stewart, with too truthful a foreboding, "that if the cholera or any other

" severe epidemic were to make its appearance in Kingston, the virulence of it " would be increased in the neighbourhood of this burial ground, because of its " very impure exhalations. I have heard this opinion confirmed by a medical " gentleman."

The evidence of Mr. Chandler, one of the curates, amply confirmed Dr. Stewart's testimony. " I have personally experienced much inconvenience " when performing duty from the effluvia arising from graves of bodies recently " interred being re-opened, and I have every reason to believe that the sur- " rounding atmosphere must be thereby affected." The parish clerk said, " the " west side of the west ground has been opened four times to my knowledge " within the last eight years;" and according to the sexton, " the smell from " the graves is often very great, and sometimes we are obliged to remain at " a distance from the grave to perform the service. It very often occurs that " after a shower of rain, although graves are not opened, yet the effluvium is " so great that it becomes very offensive."

A large piece of ground at May's Pen, to the west of the town, was subsequently taken in connexion with the Established Church; but the evils of intramural interment are still going on to the present day in Kingston.

The character and condition of the *dwellings* of the *great mass of the inhabitants* serve to aggravate tenfold the mischievous effects of the general contaminating causes, already described. The construction of very many of the houses occupied by the middling and sub-middling classes is faulty in the extreme. Often no proper foundation is made, the joists are laid down at once upon the bare undrained soil, and the boarding is placed upon them. They consist but of one floor, a little raised above the ground, and are ill suited for a climate where a free perflation of air at all times is so much required. The ventilation, being entirely from side to side, is of course suspended at night, when the doors and windows are closed. There are never any openings in the roof. The kitchen, which is always detached in the court-yard, is the only building ever provided with a chimney. Even in the daytime the atmosphere in such dwellings is close and oppressive, often positively nauseous, unless the sea-breeze be blowing through them. Not unfrequently (and the remark applies to some of the large and superior houses) goats, pigs, dogs, and poultry are kept under the floor of those that are raised a foot or two above the ground; a practice common in every part of the island, and one which cannot be too much reprobated. Then, too, if there be a yard around the house, it is seldom paved; and all slops being thrown into it sink into the soil, carrying the soluble parts of the litter with them. The offensive smell arising from such a state of things is always greatest at night, when the air, charged with moisture, is still and motionless. But the filth within is often greater than the filth without. " I was called," said Dr. Macnab, one of the leading physicians, to me, " to see a man, and on " entering, the stench from the place was horrible. On the floor yams might " have been planted; and on determining to know the cause of the stench, I " found in a corner of the building the entrails of a fowl, with feathers and " other rubbish, which must have been lying there for several days." Such is but one of similar statements continually given by the medical men of the town.

A vast number of the habitations of the lower classes are equally bad with those already described at Port Royal; nothing can be more filthy or miserable; and yet most of them are, as I was informed, occupied by petty freeholders exercising the right of elective franchise. In the outskirts of the city in different directions, there are groups of such hovels, with a few of a somewhat better description interspersed amongst them. Of this description are Hannah's Town, Altman's Town, Smith's Town, Rae's Town, &c.

The water supply in Kingston was formerly derived altogether from wells in the streets and in private yards. The water, thus obtained in the lower part of the town, is apt to be brackish and otherwise impure. It is no uncommon thing to find wells sunk in the immediate vicinity of huge unbricked privies, whose fluid contents readily permeate the loose soil. Within the last eighteen years, a company has been formed for bringing the water supply from the Hope River in the St. Andrew's Mountains. It is truly surprising that this had not been done long before, when Kingston was a wealthy and flourishing city. Unfortunately the works are, in an engineering point of view, far from being satisfactory. A large outlay has been made, and expenses are continually

being incurred, and yet neither is the supply regular and sufficient, nor is the quality of the water often what is to be desired. As in many other public works in Jamaica, the want of competent engineering skill in their construction is abundantly obvious to even the unprofessional eye. From the state of the streets, and the utter want of any artificial drainage, the very increase in the water supply has not been without its evils. Not to mention the sloppy state of the thoroughfares when they are sluiced, much of the washing, which used formerly to be carried on in the environs, is now done in the town; and the consequence is that tenfold the quantity of foul water is cast out upon the surface, to lose itself where it may.

The following document will serve to show the opinion of the respectable inhabitants of Kingston as to the condition of their town.

Extract from the Presentment of the Grand Jury of Kingston, on 21st Dec. 1850.

"To his Honour Mayow Short, Chairman of Quarter Sessions.

"There is, perhaps, no city in the civilized world in which the lower classes of the population have received such licence to indulge in personal and domestic squalor and filth as in Kingston. There are ordinances, we believe, for the preservation of cleanliness in the city, but the state of our largest thoroughfares proves that they are permitted to remain a dead letter. There is, however, a total absence of either legislative or municipal power to compel wholesomeness in and about the hovels which form the residences of the great mass of our population; and, more than all, there are no laws whatever to prevent these hovels, which not only disfigure the city, but are calculated at such a period as this to foster if not to retain disease, from being erected. We believe that in other countries such hovels as are to be found all round Kingston, as well as in its heart, are by law forbidden to be built within a certain distance of cities and towns, or, if in a filthy and dangerous condition, removed. Whether such evils can now be remedied, must be the subject of consideration for the Legislature; but we know nothing that tends so much to demoralize the people, and to promote and foster indolence and plunder, as these receptacles of filth and vice.

"There are local nuisances of a more general character to which it is also our duty to draw your honour's attention. The streets and lanes of Kingston are disgraceful to the community, not only from their dangerous condition, but from the filth permitted to accumulate in them. There is not a drain or sewer in the city, and the streets consequently become the deposit of all the filth and garbage ejected from the dilapidated premises with which the city abounds. It is not too much to say, that even now, after cholera has swept through the city for upwards of two months, the state of public cleanliness is worse than when it first appeared. The public markets have been visited by us, and have been found in a state of filth, disgraceful to those who have the charge of them. At the gates of the new market we found heaps of vegetable rubbish decaying and decayed, and pools of stagnant water, in which lay rotten oranges and cocoa nut husks. The interior of the market we found in a similar state; and we cannot help remarking on the singular fact, that not any of the large revenues derived from the market (as well by the corporation as by the sinecurist) should be appropriated to the daily cleansing of so important a public establishment. The landing-place, the only public one in Kingston, is so dilapidated as to be dangerous to life, and is totally unsuited to such a city as Kingston. The custom of slaughtering sheep and goats at the landing-place is also one very much to be reprehended, and we would strongly urge that this disgusting operation should be transferred to a more suitable place. The fish market appears to us also to be unsuitable, and from its peculiar construction, arrangement, and condition to be injurious to public health.

"We desire also to present a house in Maiden and Water Lanes, the property of Barnaby Mandan, as being in a dilapidated and dangerous condition, and to direct attention to the dungheaps in the neighbourhood of the railway. The state of the gully above and below Hardy's Bridge, and the starving hogs and dogs roaming through our streets, are nuisances dangerous to public health."

The circumstances connected with the appearance of the cholera in Kingston are these. There had been during the latter part of September and at the beginning of October a good deal of diarrhœa and dysentery; but, as these disorders are common at that period of the year, they did not excite particular attention. A very sickly season had, however, been anticipated, in consequence of the peculiarity of the weather. Immediately after the occurrence of the first case of cholera at Port Royal, there was a remarkable prevalence amongst all classes of a peculiar intestinal uneasiness and discomfort, consisting chiefly in a rumbling or rolling of the bowels, often with little or no tendency to diarrhœa, but with a sense of inward sinking, so as to require the use of wine or other stimulants.

A fisherman of the name of Phipps, living within one of the ordinary close and filthy negro yards at the upper end of Oxford Street at the north-west end

of the town, left his hovel early on the morning of the 8th of October to go down to Port Royal. He was ailing somewhat at the time. During the day he was attacked with diarrhœa and pain in the bowels. He returned home very week and faint. During the night vomiting came on, and the looseness continued. He remained in this state next day. Cramps of the abdomen supervened towards the evening. He became worse at night, and died early on the morning of the 10th. The patient had not been seen by any medical man during life. The history of his illness was obtained at the coroner's inquest.

A post mortem examination of the body was made by Dr. Scott of the public hospital. The appearances found clearly indicated the nature of the disease.

Neither the woman with whom Phipps cohabited nor any of the persons living in the same yard were attacked at the time, nor for a fortnight afterwards.

The second case took place in a similar yard in the same street, but on the opposite side of it, and two or three hundred yards at least distant. The patient was a young negro girl, who was attacked on the afternoon of the 10th with watery purging and vomiting, and cramps in the arms and legs. She lingered till three o'clock next morning. No medical assistance had been obtained. A coroner's inquest was held. No communication whatever was traceable between these two cases.

The third case occurred on the following day at the corner of Salt Lane in the Spanish Town Road, and therefore not far from where Oxford Street joins that road. Immediately in the rear of the house, which was of a better description, is an enormous dungheap of many years accumulation. Several other cases speedily followed in this locality.

On the 12th a case occurred in West Street, and another at the opposite or eastern end of the town near the gully, in a small confined room separated by a wooden partition from a foul privy; and a third in Duke Street, about the middle of the lower half of the town. About the same time, a boatman from Port Royal was found in his boat nearly collapsed, and was immediately taken to the public hospital.

Cases soon began to multiply in various quarters of the city, and, ere long, the pestilence was fairly developed in an epidemic form.

For the first three weeks its chief stress fell upon the west-end districts, which are at all times and in all seasons, from causes already explained, the most unwholesome part of Kingston.

At a very early period, the disease broke out with great violence in the General Penitentiary.

With the permission of the governor, a hundred convicts were obtained, upon the application of the civil authorities, on the 13th, for the purpose of cleansing the streets of the city, Many of them were immediately employed near the spot where the first cases had occurred. The earliest attack amongst these men was on the 15th. The man died the same night. The next fatal case was on the 18th. From that date the attacks rapidly increased. No fewer than 23 deaths took place on the 21st and 22d. Between that period and the 7th of November, eighty more had ensued. The disease lingered in the institution till the end of the month, when it entirely ceased.

The number of convicts in confinement at the date of the first case was 532, including twenty-six military prisoners, who were removed on the 16th, so that the number remaining amounted to 508. Of these 128, or rather more than one-fourth of the whole, perished. The number of white prisoners was 7, and that of the brown or coloured 26; all the rest were black. Two deaths occurred among the whites, and as many among the browns.

A very large majority of the attacks took place between 10 P.M. and 5 A.M. The utmost diligence was used, under the judicious directions of Mr. Daughtrey, the governor of the prison, and Dr. Campbell, the medical officer, to detect the earliest symptoms of deranged bowels among the men. Before going out to work in the streets every man was carefully questioned, and none who had the slightest indication of sickness was permitted to leave. From the insufficiency, however, of attendants at night, and from the obstinate apathy of the prisoners themselves, in not making known the early symptoms, nearly one half of those attacked were when found in a state of or approaching to collapse, and in this state they were conveyed to the hospital of the prison. The men had an extreme aversion to being taken there, and several resolutely refused being

removed from their cells. So great was the panic, that it was scarcely possible to maintain discipline at the time.

Mr. Daughtrey has remarked that "of the forty convicts employed (in "digging graves) at May Pen from day to day during several weeks, not one "fell by the disease."

The following table will show the daily number of attacks which proved fatal, the date of death, and the duration of the disease in the institution.

Attacks and Deaths in the Penitentiary.

Date.	Number attacked.	Date.	Deaths.	Duration of the Attacks
1850 October 15	1	October 16	1	4 died within 6 hours.
„ „ 18	5	„ 18	2	41 died from 6 to 12 hours.
„ „ 19	2	„ 19	2	28 died from 12 to 18 hours.
„ „ 20	7	„ 20	4	15 died from 18 to 24 hours.
„ „ 21	20	„ 21	12	22 died from 1 to 2 days.
„ „ 22	3	„ 22	11	6 died from 2 to 3 days.
„ „ 23	2	„ 23	2	6 died from 4 to 5 days.
„ „ 24	6	„ 24	6	5 died from 7 to 9 days.
„ „ 25	10	„ 25	3	1 died from 9 to 10 days.
„ „ 26	4	„ 26	10	Of these 2, white, died within 8 and 11 hours.
„ „ 27	6	„ 27	3	1 brown after 15 hours.
„ „ 28	8	„ 28	11	1 brown after 47 hours.
„ „ 29	7	„ 29	3	
„ „ 30	3	„ 30	6	
„ „ 31	7	„ 31	6	
November 1	4	November 1	6	
„ „ 2	2	„ 2	6	
„ „ 3	3	„ 3	2	
„ „ 4	4	„ 4	4	
„ „ 5	4	„ 5	5	
„ „ 6	6	„ 6	4	
„ „ 7	2	„ 7	4	
„ „ 8	3	„ 8	2	
„ „ 10	1	„ 10	2	
„ „ 11	1	„ 11	1	
„ „ 13	2	„ 12	2	
„ „ 16	2	„ 13	1	
„ „ 19	2	„ 15	1	
„ „ 20	1	„ 18	2	
		„ 19	1	
		„ 20	1	
		„ 23	1	
		„ 28	1	
	128		128	

The Penitentiary is situated near the shore of the harbour, at the east end of the city. Of recent years, a large quadrangular space has been inclosed by most substantial brick walls, so that ample room is afforded for the out-door employment of the convicts in various occupations. The ground, which slopes somewhat from the north wall to the sea, consists of a loose sandy soil resting on a bed of brick-mould. Water is found abundantly at a small depth from the surface,—at one or two feet near the beach, to three, four, or six in other parts of the prison yard. Being quite clear and fresh, it is used for the drink of the prisoners, two or three shallow wells having been sunk for the purpose. No part of the prison ground is paved. The situation is one of great humidity.

Most of the dormitory cells in the old buildings of the Penitentiary are for the reception of several prisoners; the number confined at night varying from half a dozen to a dozen or more, according to the dimensions of the cell and the more or less crowded state of the prison. Their ventilation is most imperfect, being dependent upon one or two grated openings in the walls, and a similar one above the door. The prisoners sleep on mats laid on the floor. The atmosphere of these places in the morning when their inmates are let out is nauseous in the extreme, charged with the effluvia not only from the bodies of the prisoners, but from the uncovered urinal tubs left therein for the preceding twelve hours.

It does not belong to the present narrative to do more than merely allude, in passing, to the revolting disclosures of horrible vice among the prisoners, made before a committee in 1850. Moral and physical pollution very usually go hand in hand.

Within the last few years, two rows of two-storied and single-celled buildings have been erected; but, as yet, only part of the lower or ground cells have been occupied. Their dimensions are not more than between eight and nine feet long, four and a half wide, and about eight in height to the spring of the low arched ceiling. Considerable attention has evidently been paid to their ventilation; but still this is very insufficient at night, when the door is shut. One great defect here, as in almost every building of the sort, is the inadequate size and often, too, the malposition of the openings for the admission of fresh air below, as well as for the escape of the impure air above. The tubs add greatly to the offensiveness of the cells. Many of the fatal cases of cholera occurred in these single cells.

A few years ago, dysentery and diarrhœa were seldom absent from the Penitentiary; now they are comparatively rare. Many improvements have been effected by Mr. Daughtrey. The privies were at that time in a very foul state, and the ventilation of the cells was even much more defective than it is now. The former nuisance has been greatly corrected by sluicing out several times daily the open drains, which lead to and through the closets to the sea. In ordinary seasons, the prevailing diseases now among the prisoners are those of the respiratory rather than of the digestive organs.

The structural arrangements of the Prison Hospital reflect the highest credit on Dr. Campbell, under whose directions it was laid out. It is by far the best ventilated building I saw in Jamaica, and may be regarded as a model to be imitated.

The prison chapel is also well ventilated. It might be advantageously used as a convenient dormitory in times of epidemic sickness, for the purpose of thinning and dispersing the prisoners.

The *Lunatic Asylum* and the *Public Hospital*, situated at the opposite extremity of the town, and near to Oxford Street, were early visited by the plague. Though adjacent, they are separate and distinct buildings. As has been already stated, a boatman had been taken to the hospital on the 14th of October, and died there the same day. No case originated within the building till the 23d. On the 18th, however, it had broken out with alarming force in the asylum. The number of inmates at that time, exclusive of ten or twelve officers and domestics, amounted to 145; sixty-six males and seventy-nine females. Notwithstanding the repeated remonstrances of Doctors Magrath and Scott, the asylum, at all times over-crowded, was more than usually so just before the invasion of the cholera. The first case occurred in a confined ground-floor dormitory, in which fourteen lunatics slept. Its dimensions were such as to afford about 500 cubic feet of space to each; the ventilation was bad, and the tub nuisance was often horrible. Within five days, 123 of the inmates were attacked, and of these eighty-two died. The majority of the male lunatics were removed, on being taken ill, to a cholera hospital established in the neighbourhood. Most of the females were treated in the asylum. The proportion of the attacks, and the mortality among those attacked, were nearly alike in the two sexes. After the 23d no fresh cases occurred among the few remaining inmates of the asylum, with the exception of a solitary instance on the 30th of December, when the disease had all but entirely disappeared from Kingston.

In the Public Hospital there were 365 inmates (291 males and seventy-four females). Between the 23d and the 31st October (on which day between forty and fifty of the patients were removed to the Admiral's Pen, at the outskirts of the town,) ten fatal cases had happened. In November there were twenty-seven, and in December two;—in all thirty-nine since the first case.

In the Asylum nearly five sixths of the inmates were attacked, and of these two thirds perished; while in the Hospital about a fourth were attacked, and one half of the cases proved fatal. Allowing for the more advanced age of most of the lunatics, the greater overcrowding in the Asylum than in the Hospital had doubtless much to do with the above difference; the Asylum is moreover much more hemmed in than the Hospital; there is less open space around it, and consequently much less current of air through the buildings. It is altogether

most unsuitable as an abode for the insane, and should be immediately evacuated.

For several years past, the medical officers of these institutions have urgently impressed on the board of governing commissioners the necessity of different sanitary improvements, with the view of preventing various forms of disease which have been long endemic in both of them, and from which the health of the patients has seriously suffered. Some improvements had been effected, with marked benefit to the inmates, more particularly by the abatement of diarrhœal and dysenteric affections which formerly prevailed to a great extent, and by the less frequent occurrence of erysipelas ; but the extent of the alterations was quite inadequate to the requirements, and bowel complaints still continued to be very prevalent. In March 1850, just six months before the appearance of the cholera in the island, they addressed the board upon "the necessity that "exists for the removal of the cesspools, and for establishing a proper system "of drainage, to carry off the filth and superfluous water from the institution. "Several fatal complaints, such as bowel disease, erysipelas, and scurvy, originate "in the Hospital, for want of proper drainage. During the cooler seasons of "the year they are not so prevalent; but in the warm weather now approaching, "and the present crowded state of the establishment, should an effectual "system of drainage not be adopted, *we dread the most serious consequences.*"

And in their annual return, laid before the House of Assembly for the year ending 31st October of the same year, these gentlemen emphatically record their opinion of the baneful influence which the local and easily removable causes of unwholesomeness, in both buildings, had exercised on the fatal virulence of the new pestilence, which had shortly before appeared:—

"Although several improvements were made about the Hospital and Asylum "previous to the appearence of the cholera in the island, they proved inade-"quate to destroy the causes which fomented the disease, which we have no "reason to think was introduced into the establishment by infection. The epi-"demic, having found its way to Kingston, produced the most baneful effects "in places where it was fostered by certain influences; and unfortunately some "of the worst kind existed in the institutions, and particularly in the Lunatic "Asylum, the cells of which were excessively crowded, and incapable of being "properly ventilated, and where consequently the disease appeared in its most "malignant form, carrying off its victims in a few hours, in defiance of all "remedial measures. In consequence of the improper construction of the "cells, and their very crowded state, *our worst fears have been realized.*"

Two days after the occurrence of the first case of the epidemic in the Asylum, Drs. Magrath and Scott recommended the immediate thinning of the patients in both institutions ; but this most important measure was not carried into operation for ten days subsequently, by which time a vast mortality had already taken place. "Such are the dreadful effects of delay, when we have to deal with pestilential disease."

In Kingston no part or district escaped the ravages of the pestilence, wherever the people were living in filth and huddled together. It was particularly severe in Harbour Street and other low lying parts of the town. From a single house at the east end of this street, nineteen corpses were carried out in the course of six-and-thirty hours. The inmates were chiefly women of bad character, and amounted in number to about forty when the disease broke out. All the survivors were more or less affected; some severely. Independently of filth, want of ventilation, and other predisponent causes, personal and domestic, of disease within, there was a laystall at one side of the house, with a foot deep of excrementitious mud and stagnant green slime on the surface, where cattle were penned before being taken to a slaughter-house in the rear of the building. It is an instructive fact that in the police station house, almost immediately adjoining, not a single fatal case occurred. The situation is not favourable, but the rooms were kept clean and well aired. Several deaths took place in the adjacent house on the other side of the station. All the clusters of negro dwellings in the suburbs of the town were devastated. The mortality in Raes's Town near the beach was excessive. Along the eastern gully, too, the deaths were very numerous. "This is indeed a horrid place," says Mr. Daughtrey. "One wonders less that people should have died in the wretched

" hovels adjoining it, than that they could have lived in them. In addition to " the usual nuisances of which this gully is the receptacle, there are scattered " over it heaps of rags, the dress and bedding of the dead."

While death was thus raging in every direction among the great mass of the people, the well-conditioned classes all but escaped; not above two or three in a thousand perished; and it is worthy of notice that seldom more than one member of a family so situated was attacked with the developed disease, although the other inmates of the house had been in constant attendance upon the patient.

It is also worthy of remark that very few of the coolies, amounting to upwards of three hundred, about Kingston fell victims to the pestilence. At its appearance, they were living in some wretched hovels at the worst extremity of the town near the terminus of the railroad. By order of the city authorities they were driven out of the spot, and their dwellings burnt down. Most of them, it was believed, lived and slept in the open air. The comparative exemption of these people, (who were far more active in removing corpses, burning bedding, and cleansing out court-yards, than any of the creole population,) was doubtless owing to this very circumstance rather than to, as some imagined, any less natural susceptibility to the influence of a disease which has proved so destructive to their race in their native country.

The mortality in the cholera hospitals was very great, owing principally to the patients being already in a state of collapse before their removal to them. " Two thirds of the deaths," wrote Dr. M'Fadyen, in the first week of November, " are in cases brought in in a moribund state. In some instances, death " occurred during their transit in a common cart to the hospital."

The disease continued to linger in Kingston until the middle of January.

The entire mortality, although not exactly known, is generally believed to have reached nearly 5,000, out of a population of rather less than 40,000. Had London been visited with equal severity, between *two and three hundred thousand* deaths must have taken place. It is only by comparing one place with another, that we learn to perceive the terrible magnitude of an affliction like that of cholera in Kingston during the short period of five or six weeks.

III. Spanish Town, the seat of Government and capital of the island, was built by the Spaniards in 1500. It stands upon an extensive flat or savannah; hence its name of St. Jago de la Vega, or St. James of the Plain. The plain is bounded on the north and north-west by the hills of St. Catherine and St. John, about four miles distant, and gradually slopes towards the western sweep of Kingston Harbour, the nearest point of which is six or seven miles removed. Eastward and westward it stretches, in the one direction to Kingston, and in the other, bearing somewhat to the southward, to Old Harbour; both of which places are at a distance of about 13 miles. The country around the city is chiefly occupied with extensive grazing grounds or pens, interspersed with a good deal of wooded land, the wood consisting chiefly of the cashaw (*prosopis juliflora*), with a little logwood (*hæmatoxylon campeachianum*), &c. At the present time, large patches of it are lying waste and in wild bush. The whole district is known by the name of the Salt-pond Plains. The soil is clayey, and very retentive of wet after rain; and as little has been done for the drainage of the land, pools and partial swamps are then apt to form wherever there is any depression of the surface.

The River Cobre runs along the north and east sides of the town. After pursuing a lazy and very tortuous course through the plain, it at length empties itself by two mouths, one natural and the other artificial, into Kingston Harbour, at Hunt's Bay and at Passage Fort.

The situation of Spanish Town is far from being naturally salubrious, nor has art done much to improve it. Midway on the road to Kingston, and therefore to the windward of Spanish Town, there are extensive lagoons and swamps. The exhalations from these are at all times, and especially after heavy rains, very pernicious, and render the estates and negro villages around them notoriously unhealthy. Their noxious influence is often sensibly experienced at Spanish Town, although six or seven miles distant. But independently of these larger and more removed sources of malaria, there are some bad swampy localities in different

directions around and immediately adjoining to the town. The effluvia from the one on the south-east side are at times putridly offensive; while in another direction there is a long line of foul morasses and stagnant ponds, close to neglected burial-grounds, and partially covered with rank weedy vegetation, the debris of which is continually adding its share of malaria to the already poisoned atmosphere. Yet, in this deadly locality, not a few of the lower classes have been allowed to squat themselves down in the most wretched hovels. Much of the ground, too, around the race-course is no better than a morass after rain. The avenues leading to it are used as a place of deposit for filth and rubbish. It was here that most of the victims of the cholera were interred. Several large pits were dug, and from forty to sixty bodies were interred at a time.

Besides these sources of insalubrity in the immediate outskirts of the town, the neighbourhood of the river is noted for its unwholesomeness, particularly after it has overflowed its banks, and when these are left covered with the feculent mud which it brings down in its course.

The several deep gullies, too, in different directions, down which the heavy rains rush from the streets as well as from the surrounding savannah lands in their passage to the Cobre, serve not a little to aggravate the mischief. Irregular and winding in their course, with their channels broken and uneven, much of the water is necessarily detained until it either soaks into the earth or is gradually exhaled by evaporation, while their sides are fringed and overshadowed with rank weeds continually undergoing decay. They are, moreover, made the receptacles of stable manure and other refuse of the town. Of recent years many of the dwellings in the vicinity of these gullies have become deserted, in consequence of their inevitable and increasing sickliness.

It will be thus seen that, from the very situation of Spanish Town, both the sea-breeze during the day and the land-wind at night are liable to be charged with malarious moisture.

The city occupies about a square mile in extent, but much of this space is not covered with buildings. The streets run slantingly north and south, crossed by others from east to west; none of them are paved; several not even macadamized, and those which are but imperfectly so. The surface soil is highly argillaceous, speedily forming a cohesive mud, which, while it tends to retain much moisture in wet weather, becomes when dry an indurated crust reflecting very powerfully the rays of the sun. There is a bed of silicious sand below, and this rests upon a stiff blue clay which in many places comes up near to the surface. From there being a slight declination of the ground towards the river, most of the water after heavy rains runs off in that direction. In some places, however, it collects in ponds or stagnates in swamps.

The general aspect of the town is much altered from what it was in former days. Signs of neglect and decay are everywhere met with. Many of the larger houses are falling to pieces, the gardens choked with weeds, and the surface littered over with rubbish of all sorts. Others are but partially occupied, and more or less dismantled. In and around the town, there are numerous plots of ground now covered with bush and the ruins of former buildings. The houses of the middling classes have in general a mean appearance, and being very generally but single-floored, and most imperfectly ventilated, are anything but suitable for such a climate. As to the negro dwellings which are scattered up and down, but chiefly in the outskirts, nothing can be worse. Usually, they are of the most squalid and miserable description; many of them are situated close to stagnant ditches, &c., with filth invariably inside and out; and all of them are crowded to excess.

But no one can judge of the real condition of most of the dwellings of the people in Spanish Town, by merely walking along its streets and lanes.

You must enter them, pry into their recesses, and pass through to their courts and back yards; and there, even in the case of tolerably good and respectable houses, you are pretty sure to discover nuisances of the most noxious description. Take an instance or two. In perambulating the town with Dr. Bowerbank, he pointed out to me a house, externally neat and wholesome, where several fatal cases of cholera had occurred. It was single floored, but considerably raised from the ground. We entered. The rooms, although rather low and insufficiently ventilated, were clean and of tolerable dimensions. We passed through to the back yard, which might be from 18 to 20 feet wide,

and little more than half that extent in length. Here, besides the usual domestic nuisance close to the walls of the house, there was a large filthy pigsty in one corner and a pony stable in the other, while the irregularities of the old pavement, made of rounded stones, gave lodgment to the putrid fluid which streamed from them both. A goat and numerous poultry were also kept. Outside the walls, which fenced in this yard, things were if possible worse; for the ground was so bestrewed with pig ordure that it was scarcely possible to pick one's way without being bemired.

Dr. Bowerbank thus describes the locality where the earliest case of choleraic diarrhœa occurred in Spanish Town: "The dwelling (in Young Street) was "confined, and joined on, under the same roof, to a store containing sugar, "salt fish, &c.; surrounded by high walls and buildings; badly ventilated, and "at night so very close that it smelt exactly like the hold of a sugar ship. At "this time the back yard was very dirty, and excessively offensive from the "presence of horse dung, fish barrels, sugar hogsheads, &c. The yard was "badly paved, and there were several puddles of stagnant water and urine. "There was also a pigsty; but the animals had, I believe, just been removed. "The inmates of the house were much crowded at night. To my knowledge, "eight cases of cholera and choleraic disease occurred in this yard during the "epidemic."

Even at the dwellings of the gentry, the back courts are not unfrequently most impure and unwholesome; and their free aeration is generally not a little interrupted by unnecessary vegetation, of which there is far too much both in and around the town.

"The yard of my house, to which I had been compelled hastily to remove "just before the appearance of the cholera," says one of the resident physicians, "is very confined and cramped as to space. It is enclosed by walls, "within which are the out-houses for servants, &c. The privies are in a "corner, quite unventilated, and were at the time very foul; and, from the "impossibility of getting the manure at once removed from the stable, a large "offensive heap had accumulated. The paving of the yard was much out of "order, and covered with puddles of rain water." No fewer than seven severe cases of the epidemic occurred within these premises.

From the neglect of regular scavenging of the streets, filth and rubbish meet the eye in every quarter of the town; while the nose is assailed with foul smells from surface nuisances, as well as from filthy stables, goat-pens, &c. Lempriere, at the close of the last century, alludes to "the stable sweepings "left in the streets to be saturated by the rain, and afterwards giving rise to "unhealthy exhalations;" and the Central Board of Health, in their report, declare that "when the soil has been thoroughly saturated, there will then be "found effluvia of a most noisome nature arising from the ground."

Perhaps there is no part where the very worst nuisances abound more than in the vicinity of the market, in consequence of there being no proper means of conveying away the drainage from the animal and vegetable refuse. Much of it is washed down to stagnate in open pools, whose loathsome contents poison the atmosphere all around.

There is but one underground sewer in the whole town; a large square-bottomed brick structure, leading from the barracks to the river, into which it discharges itself near the magazine. It was constructed, I was told, nearly a century ago. There are several grated openings, at different points, along its course; and thus a good deal of the surface water, as well as the rubbish left on the streets, finds its way into it. Every now and then it becomes obstructed, and foul effluvia are evolved from the openings in question. It is said that there is a drain from the Government House, and another from the House of Assembly, communicating with it. These, I may remark, are the only buildings in Spanish Town provided with waterclosets. Although the sewer leads from the barracks, for the benefit of which it appears to have been originally constructed, it is certain that the privies there have no direct communication with it. As far as I could learn, there is no plan of this sewer to be found in any of the public offices.

The state of the various burial-grounds (of which there are four or five at least) in Spanish Town is another great evil to the public health, while their neglected appearance cannot but have an injurious influence on the moral feelings of the people. Their soil is in most places a stiff tenacious clay,

altogether unsuitable to the purposes of interment; here and there it is little better than a swamp. The surveyor of the town stated that, during the rainy season in the summer of 1850, one of the burial grounds of the Established Church was for some time under water, and that, after this had dried up or ran off, the earth over several of the more recent graves was found to have been been washed away two or three feet deep, so as nearly to expose the coffins. Some of the grave-yards are also overrun with bush and pinguins, so that the stranger is quite surprised when he is told that they are places of Christian sepulture. They look more like waste lands. Occasionally, among the lower order of blacks, a grave is made within the narrow enclosure around their huts.

Lempriere speaks of the pernicious effects of the state of things in his day:—
"The burial-ground, which in all towns, but more particularly in this climate,
"should be situated out of the circle of the town, is here placed nearly at its
"windward extremity, and it is too well known is already occupied with a
"greater number of the dead than it ought to accommodate. During the
"hotter months the ground of this, like that of other situations, cracks, and
"forms chasms through which the heavy rains easily penetrate, and afterwards
"furnish exhalations which, by being conveyed by the sea-breeze, no doubt
"contribute a large share to the production of the prevailing endemic fever."

Of the multifarious sources of mischief, moral as well as physical, in Spanish Town, none is more flagrant and inexcusable than the present condition of the parish lands. They amount to not less, it is said, than 1,200 acres in the immediate outskirts of the city. They were assigned, under an old island Act, to the municipal and vestry authorities, for the benefit of the industrious poor, and for the general welfare of the community. They have, by mismanagement, become one of the worst nuisances of the town. It is notorious that the greater number of the persons who have settled down or taken possession of them not only pay no rent, although the formality of granting leases is, I believe, still kept up, but that they are year after year permitted to neglect and violate the wise regulations that were originally framed, and are still in existence, for preserving the land in good order. The whole has become a foul neglected waste, overrun with weeds, belittered with decaying refuse of all sorts, and partially occupied with swamps. It is of the wretched hovels that have been reared here of which the Central Board complain, as "being altogether unfit
"for human habitations; yet in them are to be found crowded together men,
"women, and children, night and day, with scarcely a dry spot to lie upon, still
"less a covering to protect them from chill and rain; their beds most fre-
"quently a door or shutter, if procurable, and if not then the bare earth for a
"pillow; only one suit of clothes in their possession, and these worn until
"reduced to rags with dirt and filth." It is scarcely necessary to add that human beings in these circumstances are not only squalid and diseased, but vicious and depraved. The occupants are the vagrants of the town, living by occasional jobs, when they choose to exert themselves, or by thieving and other forms of crime. The ravages of the cholera here were dreadful. Well might Dr. Turner, in his remarks on the pestilence in Spanish Town, say, "to pre-
"vent or even to mitigate the effects of cholera in future, all these places should
"be burned down, the land drained, and houses built of a better description."

But it is not only in regard to the shameful neglect of the public lands that the parochial authorities are highly reprehensible; the provisions of more than one local Act give large powers for the correction and prevention of many existing nuisances, and for the preservation of the town in a far better condition than it is now, or has been for several years past. Repeated remonstrances have been made; but no real attempt at improvement has ever been made, and things are of course every day becoming worse. The following extract from the presentment of the grand jury of the county to the chief justice in February 1845 will show the then condition of the town:—

"The state of the streets and lanes of Spanish Town have had our most diligent and careful attention, and, after a minute inspection, we find we can only arrive at one conclusion, viz., that their condition justifies your honour's stringent remarks. That the health of the inhabitants of Spanish Town should be affected, we are not surprised, from the quantities of filth and dirt lying in almost every part of the town, more particularly the avenue leading to the river, the streets leading into and about the race-course, and the market-place, where we found a deposit of dung and rubbish which we could not have conceived to have existed, or to have been allowed by the authorities to accumulate. The race-course, instead of being, as contemplated by the legislature, and as it ought to be, a

place of recreation for the inhabitants, is one immense dunghill! and were fire unfortunately to occur, the heaps of brushwood substituted for fences in that part of the town (near the barracks) would be dangerous in the extreme. In Carman Lane we found openings of great depth into the main sewers, endangering the lives of the inhabitants and all passers by, and an amount of ruin in the shape of old buildings that we could not have imagined; and indeed to enumerate all the nuisances would be next to impossible."

The supply of water in Spanish Town is far from being so good, as it might easily have been made. The water is pumped up by steam-power from the river in the immediate neighbourhood of the city into an uncovered reservoir, and is thence distributed upon the intermittent system, being laid on for a couple of hours or so three times a week. After heavy rains it is often muddy and impure. The poorer classes are still supplied by carts, which fetch the water direct from the river; as much as ninepence is charged for fifty or sixty gallons. There are no pumps, and only three wells, in the town. The entire arrangement and construction of the waterworks, which were erected in 1834, are faulty; at the present time they are much in disrepair. Much profitless expense has been incurred. Had the supply been taken from the river at a higher point of its course, not only would the water have been much purer, but there would have been no necessity, it is believed, for the use of mechanical power for its elevation, and the service might have been constant and unlimited. It is strange that, with the example of Falmouth before their eyes, this simple plan had not been followed.

After the perusal of the foregoing details, no one can be surprised to hear that Spanish Town, thoroughly surrounded and enveloped as it is in impurities, has always suffered severely in sickly seasons. It has ever proved a very unhealthy station for European troops, and there is ample reason to believe that the amount of disease and mortality has usually been high among its civil population also. It has always been a bad fever locality. The excessive heat during the day, and the chilling night air with the great humidity of the atmosphere, especially after sunset when the land wind comes down from the hills to the north, cannot fail, independently of local causes, to render the body highly susceptible to the influence of malarious poison. Whenever epidemic disease has prevailed in the island, the capital has always had its full proportion of sickness and death. The small-pox was very fatal in 1831, and in 1841 scarlatina proved highly destructive. The late pestilence, as we have seen, was exceedingly virulent. For some time prior to its appearance, the sanitary condition of the town seems to have been even worse than usual. "After the continued and heavy rains," says Dr. Morales, "which prevailed in the parish during August and September "last (1850), large pools of stagnant water remained unheeded; many of them "surrounding the town, from embankments and other causes, for weeks past, "and in some places even to the present time; the swamps constantly emitting "extensive miasms, acted upon as they almost daily are by a powerful sun, "accompanied as it has been by the almost entire cessation of the usual sea-"breezes, and combined with the excessive filth and the existence of much "noxious matter about the town, and especially in the vicinity of the river."

The pernicious effects of such a condition of things were of course much aggravated by the atmospheric peculiarities of the season, respecting which, as experienced in Spanish Town, some interesting details will be found in the Appendix (D.)

The first fatal case of cholera occurred on the 18th of October in a vagrant black youth, who was found by the police in the streets in a state of extreme prostration, and immediately conveyed to the cage. He had walked the day before from Kingston, and had had no food the whole day but a piece of sugar-cane; at night he had slept on a dungheap near the river-side. He died early on the morning of the nineteenth. For several days prior to this case, precursory indications of the approaching pestilence had been observed in Spanish Town. "Numbers complained," says Dr. Bowerbank, "of uneasy rumbling "sensations about the bowels; a feeling of nausea, with cramps and numbness "of the extremities. There was scarcely a person in the city who did not "complain of feeling something peculiar. In fact, these sensations commenced "on the 12th, on which night I was called to attend a patient suffering from "diarrhœa, with vomitings, crampish feelings, and borborygmus." On the 16th, a well-marked case of choleraic diarrhœa (colourless evacuations accompanied with cramps) occurred at a brickyard adjoining the river, and which

has always been noted as "a perfect nest for fever." On the following two days, several other cases of a similar character were seen by Dr. Bowerbank in different and distant parts of the town. After the occurrence of the fatal case, the entire community appeared to be more or less decidedly affected, and the applications to the medical man became incessant. The alarm and excitement, which prevailed everywhere, might doubtless have some effect. Dr. Palmer, a much-esteemed practitioner, was the second victim. He had attended the boy at the cage during the night of the 18th, as well as several cases at Passage Fort. During the 19th he complained of uneasiness in the bowels, but continued nevertheless his professional duties. He was attacked that evening, and died early on the following morning. Dr. Palmer was considerably advanced in life, of a delicate constitution, and had for years been subject to severe bowel complaints, which had on more than one occasion well-nigh proved fatal. For several days prior to his seizure, he had undergone much fatigue both of mind and body. Other fatal cases rapidly followed, while those of choleraic diarrhœa so multiplied in every part of the town that it was impossible for the medical men to attend to one third of the calls for assistance. "The disease," says Dr. Bowerbank, "appeared to burst out suddenly, "and in different and distant places at the same time. It attacked in groups, "and appeared to fasten upon certain yards and houses, and these it sometimes "quite depopulated. It most certainly did not travel from house to house, "from room to room, or from yard to yard. It often jumped over a whole "property. It would attack a house between two others, leaving these latter "quite untouched. In every case I observed there were or had been, I think, "premonitory symptoms. The duration of these varied from a few minutes to "one or two days." The experience of Dr. Turner was to the same effect. "One very remarkable circumstance was the rapid manner in which the cholera "spread over the whole of Spanish Town, after the first ten days of its "appearance." It was remarked by the medical gentlemen that there was always a decided increase in the number of cases after rain, especially when this fell during the night.

The ravages in many districts were dreadful. Whole families and households were swept off, and in numerous instances not a resident in the filthy confined yards of the negroes was left. As in Kingston, the utmost difficulty was experienced in the speedy interment of the dead. The burial-grounds were often literally strewed with coffins, before a grave was dug. The soldiers of the 2d West India Regiment had to be employed in the duty, the convicts being insufficient for the purpose. As a general remark, all the fever localities were cholera localities; but the latter pestilence raged in several places not noted as seats of the endemic disease. At an early period the negro village of Dempster's Town, in the outskirts and near the river, was smitten with terrible force. There, as elsewhere, the utmost difficulty was experienced in inducing the blacks to attend upon their relatives, or to administer the remedies which were ordered. "No use; he die," was the common excuse for neglecting and even abandoning the unfortunate sufferers. "The dread of contagion," says Dr. Bowerbank, "much increased, it is to be feared, the horrors of the "epidemic, and added not a few to the number of its victims. In many cases, "it was impossible to persuade persons to administer to the wants of the sick; "they were completely panic-stricken. The chief dread appeared to be con-"tamination after death; in many instances they laid out the body during life, "closing the eyelids with pebbles, and tying up the jaw with a handkerchief." The parts of the town which were most severely afflicted were Sandy Gully, Cumberland Road, Young Street especially its south end, Monk Street, Manchester Street, Nugent Street, about Redwood's Gully, and the immediate neighbourhood of the race-course, and along the banks of the river. The population before the outbreak was estimated at about 10,000; of this number nearly 1,500, it is believed, died. No regular returns of the deaths could be kept; there is, therefore, some uncertainty as to the exact mortality. Very few comparatively of the better classes were attacked with the malignant form of the disease; but the proportion was rather higher than in Kingston. Under these circumstances the cases were generally solitary; seldom was more than one member of the family attacked. In not a few of the instances, the seizure was traceable to great fatigue, excessive fear, indiscretion in food, and the neglect of the early symptoms. Thus one fine young man, after sitting up all

night till about three in the morning, went to the river and bathed. He was in perfect health at the time; within nine hours he was a corpse. In the case of another active young man who, after having day after day devoted himself most heroically to visiting the poor, fell a victim, it was discovered that for two days before his fatal seizure he had been affected with an almost continued diarrhœa. The case of Dr. Palmer has already been noticed.

At the parochial hospital or poorhouse, fully one third of the inmates perished. As almost every attack took place during the night, when no attendance was provided, the patients were mostly found dead or in the agonies of death in the morning. A good many of them concealed, it was believed, their early symptoms, from their aversion to be sent to the cholera hospital.

In the district prison, which at the commencement of the epidemic contained fifty-eight prisoners and seven officers, nineteen malignant cases occurred, and of these eleven were fatal. All the other inmates were affected with diarrhœa of greater or less severity. This building affords a marked proof of the evil effects of the intermittent supply of water. A large tank has recently been constructed in the narrow front yard, to contain two or three days supply; the walls of the tank leak, and the result is that the court is continually wet. It may also be worthy of notice that the present privies, six in number, in this prison were made in 1843, the former ones being then filled up. Being of larger size, they were not emptied till February 1850, when nightmen were engaged every night for a couple of weeks in removing their contents. This process cost about 50*l*. They are now (8th May 1851) in a most offensive state. In other respects, moreover, this institution is exceedingly faulty; there is obviously the want of a proper supervision. In one corner of the narrow yard, I saw a large heap of bones which had lain there for more than a twelvemonth.

The duration of the epidemic outbreak in Spanish Town was, as has been stated, about five weeks: its subsidence was rapid. Occasionally cases occurred subsequently, but they were solitary, and generally also much more manageable than before. A tendency to diarrhœa continued till the middle of December. On the 8th of January a woman was attacked in the market-place; but she recovered. On the 10th a gentleman, whose residence was about two miles distant, rode in after breakfast to transact business in town. He was in robust health at the time. The bowels acted two or three times during the day. He made a hearty dinner with a friend. In the evening he committed some excesses. About nine o'clock he returned home on horseback, crossing the river on his way. Very soon afterwards he complained of headache and general exhaustion, and the bowels acted several times. The evacuations became more watery. Vomiting and cramps intervened, and he died early next morning.

A month later, a solitary case occurred in a man who had come last from Kingston, where he had been engaged in making purchases. He had slept there during the night of the 14th, and started next morning for Spanish Town. He had slight diarrhœa at the time; the purging continued during the day; malignant symptoms set in the afternoon, and he died that evening.

In none of these instances, were any of the attendants on the patients at all affected, nor did other cases occur in their neighbourhood.

IV. *Falmouth* stands upon a low flat projection of the coast, which is almost entirely surrounded with morass on the land side. Its sea frontage faces in a north-easterly direction, and is thus exposed to the sea-breeze. Were it not for this, the spot would be almost uninhabitable; for, besides the encircling swamp, there is a large pond or lagoon at one end of the town, communicating with the sea, but rather below the level of the beach. Into this lagoon in wet weather the overflowings of the morass, after inundating many of the streets, find their way, and there lodge until they are evaporated. Upon the recession of the tide its exposed margins emit malarious effluvia, which are often so offensive, in the evenings, that the residents in the neighbourhood are obliged to keep their windows closed. At different points of the coast, the decaying sea-weed is another source at times of putrid smells. Major Finlay, the commanding officer at the barracks, told me that unless it was removed every second day, it proved a great nuisance to the troops.

Much of the town is built upon ground that has been reclaimed from the marsh; and this good work is still going on, under the enterprising activity of its spirited merchants. A large handsome store and offices now stand upon a spot which, a few years ago, was a foul swamp where boats have been seen plying after heavy rains;—a striking instance of what may be done in the way of improvement. Towards the projecting point of land where the barracks are situated, the soil is sandy; and here and there the subjacent lime-stone rock comes up to the surface.

From the entire flatness of the whole ground, nowhere does surface water flow readily, especially as there are no tiled or other artificial channels to promote its current. It therefore all sinks into the soil. The water used for drink is brought, by underground pipes for a distance of several miles, from the Martha Brae River. On the whole the supply is very good, and it is not a little creditable to the inhabitants of Falmouth that their town has, for the last fifty years, been better furnished with this necessary of life than any other in the island. It is satisfactory to know that, in a commercial point of view, the speculation is very profitable.

It need scarcely be said that Falmouth is much of a fever locality. Fevers here frequently assume a highly congestive type lapsing into that of yellow fever, particularly during the autumnal months, and when there is any deviation from the ordinary direction of the sea-breeze. As the land-wind at night necessarily passes over the morass, incautious exposure after sunset is a frequent cause of febrile attacks.

The remarks of the residents respecting the season of 1850 were that, during the summer and autumn months, there had been much more wet weather than for very many years before; that rain often fell at night, a rather unusual occurrence in Jamaica; and that the ordinary winds were irregular and inconstant, the sea-breeze often coming from the west or south-west instead of from the opposite direction. The weather was altogether so unusual, that some of the inhabitants apprehended an impending earthquake or other convulsion of nature. That the atmosphere was excessively humid was shown, one gentleman remarked, by the difficulty of keeping salt for the table dry. In reference to the frequency of the rains, the negroes used to say that the season was like one of the old seasons sixteen or eighteen years ago, when the sugar crops were generally much more prolific, and yellow fever epidemics were much more frequent than they have been since. They accordingly predicted, "Crops very good, but plenty sick and die this year." The medical men were of the same opinion, and apprehended a very sickly autumn.

There was some difference of opinion whether bowel complaints were more prevalent in the town, prior to the occurrence of the earliest case of cholera. The general impression was that they were decidedly so; and the books of the military hospital and of the prison proved that such had been the case among the troops and prisoners. On the morning of the 9th of November, Dr. Aschenheim was called to see a gentleman's servant who had travelled with his master from Kingston, which they left two days before. Next evening, soon after starting from St. Anne's Bay, he was seized with diarrhœa; they reached Falmouth that evening. When first seen there was neither vomiting, purging, nor cramps, but only extreme prostration amounting almost to collapse. He gradually rallied, and seemed to be recovering, when, apparently in consequence of exerting himself beyond his strength, the vital depression returned and he sunk on the 13th. No other person in the house became affected. On that day, the 13th, the earliest indubitable and fatal case of the pestilence occurred among the inhabitants. It was in a poor man living in a very filthy yard (Dickson's Yard) near the barracks. There had been no communication, even in the most indirect manner, with the former patient,—presuming that his was a case of cholera; for this was doubted by some of the medical men of the town. The house was old and dilapidated, raised several feet from the ground, and consisted of three apartments. Immediately under the room occupied by the patient was a pigsty, the effluvia from which passed readily through the crevices of the old broken wooden floor. Within a day or two, one of the inmates of the room at the other end of the house was attacked, and then there was a rapid succession of cases among the inmates of the two rooms. Close to and indeed resting against the walls of the second room, there was a large double pigsty in

a most offensive state. The occupants of the intermediate apartment did not suffer to the same extent. Many cases occurred subsequently in the other houses in the yard. The locality where the disease next appeared was in another negro yard at the very opposite end of the town, leaving as yet all the intermediate district unattacked. There in a single house, used as a place of low dissipation and vice, eighteen out of twenty-six inmates were rapidly seized one after the other, and fourteen perished within the next two days. The house is situated close to the sea, between it and the morass. The circumstances were altogether very similar to those of the house in Harbour Street in Kingston.

The epidemic now began to manifest itself in various parts of the town, and committed dreadful ravages among the lower classes, more particularly in those very localities which are in all seasons known to be the most unhealthy. Drs. Stevens and Scott pointed out to me the spots which, they had predicted from the first, would prove the chief seats of the pestilence. These it almost depopulated. One of the worst is that known as Jackson Town. Its immediate contiguity to the swamp, and the disgustingly filthy habits of the people, abundantly account for its notorious unwholesomeness. Here the fury of the cholera was excessive; but in this, as in every other district of the town, the protective and mitigating influence of sanitary arrangements in dwellings was strikingly exemplified. There are two rows of small single-floored cottages parallel to and but little separated from each other, running directly from the main street to the very verge of the morass. The ground on which they stand has, of course, been reclaimed from it. In one of these rows, not a house escaped the strokes of death; while in the other, although many of the inmates suffered, comparatively few fatal cases occurred. The former are placed squat upon the ground, several of them without flooring, all without means of ventilation, and excessively filthy; the latter are raised a couple of feet from the ground, are provided with jalousied windows, and kept moderately clean. The natural situation was alike in both; it was in their construction and general condition where the difference lay. Still more marked was the all but total exemption of one or two decent clean houses in immediate contiguity to Dickson's Yard, where so many deaths took place. The results of the epidemic in the district prison attest the same important truth. That its influence was experienced there, is abundantly shown by the fact that of seventy-six inmates no fewer than fifty-eight were affected more or less severely. Five only, however, of the cases proved fatal. The prisoners, it is to be noticed, were engaged in cleaning the streets and in digging graves. Their case, therefore, presents a very striking contrast with that of the convicts at Kingston. The debtors gaol inclosed within the same boundary, and only separated by a wall from the prison, contained at the time twenty-two inmates in all; of these three were attacked, but all recovered.

The entire mortality in Falmouth from the outbreak of the disease about the middle of November to the end of the year, when it had quite subsided, amounted to 485 deaths out of a population estimated at 3,500. The last case occurred in Dickson's Yard, the very spot where it first appeared. There were very few fatal, or even very severe, seizures among the white and respectable brown inhabitants. Those which did occur seemed, in several instances, to be brought on by the depressing influence of fear. While the families escaped, the domestics occupying the ill-ventilated outhouses in the yards not unfrequently suffered. An increase in the number of attacks during the epidemic was invariably observed after rain, and especially after a rainy night.

In Falmouth as in other places, great alarm as to the contagiousness of the disease, as well as a most unnecessary expense, was occasioned by requiring that the bedding and every thing which had been in contact with the sick should be immediately burned after death. In some instances, the loss was severely felt by the survivors and caused much distress.

V. The small town of *Port Maria* is built upon the edge of a semicircular bay, which faces north-east, and is bounded by two bold elevated promontories. On one of these, that to the west, are the remains of an old fort In the centre

of the bay is a rocky islet a few bowshots from the shore, not occupied or built upon, but finely exposed to the sea-breeze, and apparently a most salubrious spot. The town stands at the opening, here somewhat expanded, of a long narrow valley stretching inland and inclosed by hills on either side, and between the mouths of two streams which have wound their slow way along a rich alluvial bottom, clothed with the most luxuriant vegetation, in their passage to the sea. The westerly stream is for some distance exceedingly sluggish, in consequence of its channel being somewhat below, rather than above, the level of the beach, where a sandy bar driven up by the sea still further impedes the ready outflow of its waters. It is upon the opposite sides of this stream that the two suburbs of Manning's Town and Stennett's Town have been built; and as it not only brings down a large quantity of vegetable debris in its course through the valley, but is moreover made the receptacle of all the domestic and other filth of these places, this part of the river is no better than a foul stagnant pond. After wet weather, when it has overflowed its banks and the obstructing bar at its mouth, much putrescent slime is left upon the surface. But this is not the only source of insalubrity in Port Maria. Immediately in rear of the town there is a lagoon; and just beyond this, and draining into it, there is a marshy flat of considerable extent stretching some way up the valley, and enclosing the town to the southward and eastward. It will be thus seen that the situation, although most beautiful as approached from either sea or land, is inevitably one of great unwholesomeness; being exposed on every side, except that to the sea, to sources of the most noxious malaria. The whole valley has always been found by the white man to be a most sickly residence; and its endemic fevers have usually proved of a very obstinate, and often too of a very fatal, character. Few overseers have been able to reside above a year or two at Frontier Estate, the one situated nearest the bay; the malaria from the marsh below the house, Mr. Page, the present occupant, remarked to me, might be not only smelt but tasted in the morning. Trinity and Quebec estates have proved little less unhealthy; and even the private dwellings and other buildings, situated at more elevated spots on the adjacent hills, have not been exempt from the febrific influence of the tainted humid atmosphere. If such be the case with localities on the higher grounds upon either side, it is not to be wondered at that Port Maria itself, situated at the opening of the valley, has ever been so sickly a place. The sea-breeze in the morning carries the foul exhalations from the western river right upon Manning's Town, and then being stopped by the high land immediately in the rear, it is whirled back with all its noxious impregnations, and spreads itself over the entire embouchure of the valley. It is at night, however, that the worst effects are experienced. The land-wind passing down its whole extent, loaded with paludal moisture, comes directly upon the houses in the middle of the town; and sweeping over the stagnant water of the river, it is carried round the west side of the bay where the court-house, marine hospital, prison, &c. stand, on towards the fort and the adjacent parsonage, which are upon a considerable elevation. The Rev. Mr. Murphy assured me that he was often obliged to leave the rooms facing in the direction of the land, and retire to another in the opposite part of the house, in consequence of the nauseous smell from the morass in the distant valley. It is much to be regretted that the eastern promontory of the bay, known as Pagee Point, has never been selected as a place of residence. It is nearly free from the influence of those causes which have rendered Port Maria signally unhealthy in all seasons, and to which, doubtless, the frightful malignancy of the cholera there may mainly be ascribed.

A few cases of the epidemic, not however fatal, occurred during the last week of October on and near Fontabelle Estate, six or seven miles inland south-west of the bay. In Port Maria itself, a case took place on the 27th in an athletic coloured person, in respectable circumstances, who had shortly before returned from Kingston. He recovered; and no one in his family or in the town became affected. It was not till the 20th of November that the second case occurred, in a labouring man who worked at Trinity Estate, and who lived close to Manning's Town. He died. This was considered the first genuine developed case of the epidemic; but already there had been several deaths, as early as the first week of the month, at Heywood Hall and other estates a few miles distant from the bay. The case in Manning's Town on the 20th was speedily

followed by others, both there and in Port Maria. The following table shows the progress of the disease:—

Date.	No. of Deaths.
November 23	1
„ 27	2
„ 28	2
„ 29	7
„ 30	6
December 1	17
„ 2	56
„ 3	39
„ 4	27
„ 5	29
„ 6	38
„ 7	64
„ 8	58
„ 9	45
„ 10	25
„ 11	18
„ 12	23
„ 13	16
	473

Date.	No. of Deaths.
	473
December 14	10
„ 15	8
„ 16	11
„ 17	7
„ 18	5
„ 19	9
„ 20	4
„ 21	8
„ 22	5
	540
Between December 23rd and January 8th there were	13
	553

The population of Port Maria before the appearance of the cholera was estimated at 420, of Stennett's Town at 250, and of Manning's town at 330, being in all about 1,000. It is believed that nearly 200 of this number fled from the place in panic, soon after the outbreak of the pestilence, and did not return till it had fairly passed over. In Port Maria the mortality amounted to 239, in Stennett's Town to 114, and in Manning's Town to 200; so that fully two thirds of those who remained on the spot perished. In one house in the middle of the town, having the lagoon immediately in its rear, 14 out of 17 of the inmates were swept off within 50 hours. In the prison, as appears from a statement before me, nearly one half of the inmates died, and almost all were more or less severely affected. Many of the houses of the lower classes were quite depopulated. They were crowded to excess; and the poor inmates, fancying that the more they excluded the night air the less was the risk of their inhaling the poison, not only kept the doors and windows rigidly closed, but filled up all the chinks and interstices with rags, to make the place they slept in more thoroughly air-tight. Not unfrequently they tied up the jaws of the dying, before life was extinct, from their dread of touching a dead body.

In consequence of the death of Dr. Cooke, I was deprived of much valuable information respecting the epidemic at Port Maria. Mr. Kidd, who acted as his dispenser, stated that the disease was of the most concentrated virulence; often terminating in death in a couple of hours from the invasion of the malignant symptoms, with little or no vomiting, purging, or cramps. The patients were prostrated at once, and lay in a state of stupor, with their faces usually turned round upon their beds or the ground where they had fallen down, until they expired. No cholera hospital had been provided, nor was this to be regretted. One was begun to be built; but, upon the pestilence breaking forth with terrible fury before it was finished, the work was suspended. It would have been much wiser to have made use of the Marine Hospital without loss of time, had it been practicable to remove the sick early from their homes. Unfortunately nothing was done in withdrawing the people, while yet unattacked, from their vile unwholesome dwellings, and locating them for a few weeks on the promontories at each side of the bay, or on the island in the harbour. The only instances I heard of, where such a removal was attempted, were these. Seven or eight members of a highly respectable family, in which two deaths had already taken place, were induced to leave their house situated below the courthouse for the parsonage, which is higher up and much less exposed to the poisonous malaria of the valley. No fatal case occurred subsequently. Several poor persons who went up from localities where the disease was raging to the

fort, and remained there, also escaped. Comparatively few of the 200 who fled from the town, upon the outburst of the disease on the 1st of December, were fatally attacked. Perhaps, the most striking instance was afforded at Trinity Estate. A good many deaths had already occurred among the people at the works, which are situated in the hollow of the valley upon the banks of one of the streams. Mr. Shaw, the highly intelligent manager, immediately had all the survivors, almost all of whom were more or less severely suffering at the time, removed to a large building behind the overseer's house which stands upon a dry eminence close by. Only one case afterwards terminated fatally, and all the rest rapidly recovered.

The crew of an English vessel, which was in the bay during the whole time of the pestilence, remained throughout free from sickness. There were, however, two or three severe cases on board an American ship, which was also at anchor. The sailors of the latter had been guilty of excesses on shore.

The negro village adjoining to Frontier Estate was not attacked for eight or ten days after the disease had been raging in Port Maria, although scarcely half a mile distant from the bay, and having constant intercourse with it.

VI. Montego Bay is the third town in the island for population and extent. Formerly it was a place of great commercial activity, but of late years it has much fallen off, and now exhibits marked signs of neglect and decay. The ground on which it stands slopes, with a considerable inclination, westward to the sea, the fall being generally sufficient to carry down the surface water with rapidity. It is of a dry marly nature. To the north and east the town is environed by elevated hilly land which, by obstructing the sea-breeze which blows from that quarter, serves to render it excessively hot and close during the day in the summer months, while the land-wind at night is frequently very chilly and damp. To the south, it is open ; but in that direction there is, besides the river a mile or so distant, much swampy ground, the malaria from which is apt to give rise to a great deal of fever among the residents of the neighbourhood.

Montego Bay is divided in two by the main street, St. James's, which runs nearly north and south. All below the line of the street, or between it and the shore, is much flatter than the other division, which slopes up gradually to the higher land. There, too, the buildings are most numerous and close to each other, and the bulk of the sub-middling and lower classes reside. The north end of this division of the town is called Meagre Bay ; it has always been noted as an unhealthy locality. This is, doubtless, owing not only to its low situation and the very inferior description of the dwellings of the people, not to mention their filthy habits and unwholesome food, but also to the northern gully or deep irregular ravine on this side of the town, coming down to the beach between Meagre Bay and the rest of the town. After heavy rains a torrent of water rushes along, loaded with vegetable debris, and overflows the north end of St. James Street and other adjoining streets in its passage to the sea. For some time before the appearance of the cholera, this part of Montego Bay had been quite inundated. At the other or south end of the town, there is also a lengthened hollow or gully, known as the "Creek," and along which there flows a lazy shallow stream, formed chiefly by the overflowings of a well that is situated at its upper extremity. It is much resorted to by the washerwomen of the place. The stream, in its passage, receives the drainage from a very foul swamp which is in the very heart of the town; and, a little lower down, a number of butchers' stalls are erected immediately over it, so that all their refuse finds its way into the nearly stagnant water below. It then crosses the south end of St. James Street, and at length becomes a fetid black puddle or sewer stream in its way to the beach, contaminating the atmosphere along the whole of its course. Dr. Hart, Staff-Surgeon of the forces, told me that so nauseous are the effluvia at times, that he has more than once been seized with sudden headache and sickness as he passed near it.

Immediately to the north of the swamp, just noticed, is the burial-ground of the Established Church. It has long been more than fully occupied, and ought to have been closed years ago. Occasionally very offensive effluvia are emitted from the ground, when it is opened for interment. Archdeacon Williams, the rector of Montego Bay, is most desirous that a new place of sepulture should be provided, at a distance from the town. In connexion with this graveyard

and the adjacent swamp, it is worthy of notice that in 1831, when there was a very fatal epidemic of yellow fever in Montego Bay, not a single house in Church Street, which is directly exposed to the emanations from both, escaped having one or more deaths within.

There are other burial-grounds, besides this one, in the heart of the town. To these are to be added the usual domestic and other nuisances, which exist so abundantly in every town in Jamaica. A large number of the dwellings of the lower classes have no privy accommodation at all; and one of the first acts of the Local Board of Health, before the impending invasion of the pestilence, was to appoint certain spots to which the people were ordered to repair, with instructions that lime should be used immediately afterwards. The offensiveness of the necessaries in many of the larger houses may be judged of from the circumstance that I had been advised, several days before my arrival, not to put up at two of the chief lodging houses in the town, in consequence of the notorious nuisances in their back yards. The landladies of both houses died from the epidemic.

A good deal had been done in the way of scavenging the streets and yards, for a few weeks before the first case of cholera appeared. The quantity of filth and refuse removed was described to me as enormous:—"No one had any idea of the amount before; even the people employed expressed their surprise." Much of the bush had also been cut down in different parts of the town, but still an immense quantity remained. There are few towns, in which there is so much as in the east or upper half of Montego Bay.

The season of 1850 had been remarked by Dr. Lawson and other residents in Montego Bay to have been an unusual one, from a little before midsummer. The rains had been much more frequent and continuous than in ordinary years; the weather extremely hot and oppressive, especially at night, when the land-wind is usually cool and even chilly; the sea-breezes unsteady and often deficient altogether, or coming only in puffs or gusts, and not from its accustomed point, E.N.E., but from the *southward* of east. He had early predicted that the season would prove very sickly about the fall of the year. Mr. Lewin, the secretary of the Local Board of Health, informed me, that "upon a com-
" parison with previous years, the average heat during the season will be found
" to have been greater than it had been for some time before. There were
" also more rainy days in Montego Bay than for many preceding years, though
" perhaps the actual quantity of rain that fell was not much greater."

The result of the continuous rains was thatt he ground in many places in and around the town was exceedingly wet, and here and there large pools of water had formed. This was particularly the case about the north gully; that part of St. James Street and of Meagre Bay near it had been, in fact, quite inundated for a length of time before the dreaded visitation. The land, too, beyond the opposite extremity of the town, was wetter and more swampy than in ordinary seasons.

The development of the epidemic in Montego Bay was as follows.—On the 28th of November, two cases occurred about the same time at the opposite ends of the town. One was in Barnett Street, a noted fever locality situated between the swamp and the "creek," in a boy who was said to have come from Rose Hall Estate, ten miles to the eastward, where cholera had broken out two days before. He recovered; and none of the other inmates of the house, six in number, was attacked for some weeks later, when the disease was prevalent in the immediate neighbourhood. The other case was in a Portuguese woman, who lived in a low confined yard in Meagre Bay. She had been recently at Falmouth. This case proved fatal. Neither the woman's husband, her two daughters, nor indeed any one of the other residents in the yard sickened for a considerable time afterwards. Previous to the occurrence of these cases, there had not been, according to Dr. Lawson's observation, any unusual tendency to bowel complaints in the town; but forthwith almost every one in the bay began to experience them, more or less decidedly. The third case of cholera took place in an old woman living in a small ground-floor room at the sea end of the gully, not far from the abode of the second patient, with whom, however, she had had no communication. About the same time, an old man, who had walked several miles from an inland estate, was found lying on the road side near the barrack gate. He was taken to one of the cholera hospitals, and died in the course of a few hours. The pestilence now rapidly spread in

different directions. During the month of December between 700 and 800 persons, out of a population of between 6,000 and 7,000, were swept off. Its total progress is shown by the following table:—

Date.	No. of Deaths.	Date.	No. of Deaths.
1850: November 29	1	1850: December 27	19
„ 30	1	„ 28	22
December 2	2	„ 29	9
„ 3	4	„ 30	8
„ 4	6	„ 31	6
„ 5	16	1851: January 1	6
„ 6	15	„ 2	6
„ 7	12	„ 3	9
„ 8	14	„ 4	6
„ 9	11	„ 5	2
„ 10	40	„ 6	3
„ 11	22	„ 7	3
„ 12	31	„ 8	2
„ 13	35	„ 9	2
„ 14	51	„ 10	1
„ 15	40	„ 12	1
„ 16	50	„ 14	1
„ 17	64	„ 16	1
„ 18	48	„ 17	2
„ 19	42	„ 23	1
„ 20	53	„ 26	1
„ 21	41	„ 28	2
„ 22	26	„ 29	1
„ 23	23	„ 30	2
„ 24	27		
„ 25	20		830
„ 26	19		

The localities where the disease raged with the greatest fury were along the line of the north gully, including a place called Love Lane, and along the course of the creek. The hovels in the first of these spots are of the most wretched description, filthy beyond measure, and crowded to excess. Dr. Roper repeatedly found as many as six and eight persons huddled together in a hut not large enough for two; one half of them labouring under the disease, and lying on the ground in the midst of their discharges, and in a state of the most deplorable want of everything. The cold damp wind blowing down the gully at night made them close up every chink, so that not a breath of air could enter or escape.

Much of the population in Creek Street consisted of vagrants and prostitutes, among whom there was at the time a great amount of intoxication. The crowding here, as well as in many other parts of the town, was extreme. In one instance fourteen persons were found to have slept in one room, partially divided into two small compartments. Every one of the inmates was attacked, and six died. Dr. Lawson pointed out to me a low confined yard, from which fifteen corpses were carried out. In the workhouse, only three out of fifty-five paupers survived. Most of them were aged and infirm; and, from their excessively filthy habits, the state of the apartments was so disgustingly offensive that, as the matron told me, no one could approach them in the morning till the doors and windows had been left open for some time.

"We are totally unmanned," writes an eyewitness, on the 20th of December, "by the awful scenes of death and misery of which Montego Bay is one "immense assemblage; a mammoth hospital sending out its dead for burial, "with no time for mourning, no power for woe to vent itself, or for the pent-"up feelings of our nature to indulge in tears. No sooner is one inmate of a "family removed than another victim follows, and corpse after corpse attests "the fearful power of the pestilence. In this district may be seen some "thirty or forty dwellings, doors and windows open, tenantless, lime strewed "about; and pen cannot describe the cold shudder of dismay which creeps "over the spectator, as unwillingly he is forced to witness what the mind "involuntarily tells him he is passing by, and which it is in vain to close the "eye against."

In Montego Bay, as in Spanish Town and elsewhere, the utmost difficulty was experienced in burying the dead. On one occasion, when there were forty bodies on the ground awaiting interment, the gravediggers deserted their post and refused to return. It was a Sunday forenoon, and Divine Service had already commenced; but no sooner was the circumstance made known to the Rev. Mr. Hands and the Rev. Mr. Garrett, while engaged in the duties of the sanctuary, than they at once appealed to the congregations they were addressing to follow them to the burial ground. The appeal was at once responded to, and within a few hours the graves were dug and the dead interred. The conduct of these two gentlemen had an admirable effect upon all classes, throughout the whole period of the pestilence.

The prison presented a favourable contrast to the workhouse. Among fifty inmates there were only three deaths; on the 24th, the 27th, and the 31st December. Two occurred in men who were in bad health at the time. The first patient was suddenly seized, in the prison yard, with what seemed to be an attack of congestion of the brain. He was immediately taken to the hospital ward, when the characteristic symptoms of cholera speedily manifested themselves. The second patient slept in a cell with two other prisoners. They escaped entirely. The third case was in a vagrant, soon after he had been put into one of the ground-floor cells. The prison is situated between Barnett and Creek streets, and therefore between two notorious sources of insalubrity; but the condition of the establishment in point of cleanliness and general arrangements was creditable. Dr. Lawson had also taken the wise precaution of dispersing the prisoners through the different wards and cells, and of removing as many as possible from the ground to the upper floor, when the cholera appeared in the town. He had not the slightest reason to suspect that the disease had been introduced from without.

The police-station afforded another instance of the salutary influence of local condition on the results of the prevailing disease. Its situation at the end of St. James Street near the gully is far from being good; and the state of the apartments, although defective in almost every sanitary requirement, are greatly superior to that of the dwellings of the labouring class. Out of 50 inmates seven were attacked, and three died. In two of the fatal cases the patients were, when seized, occupying rooms in which other persons, who escaped, slept.

Again, the patients in the provisional hospital remained quite unscathed, while numerous deaths occurred on either side of it. Dr. Lawson attributed the immunity of the inmates to the clean and airy state of the rooms.

A few cases occurred in the female district prison, which stands upon an open elevated spot about a mile from the town, and is the only remaining part of the old barracks. One end of the building is occupied with three cells for lunatics. All direct communication with the rest of the building is cut off. The earliest case was, on the 18th of December, in a female lunatic who had been admitted only the evening before she was attacked. Another lunatic was in the cell at the time; but she was removed to an adjacent cell when the new-comer was taken ill, and she remained unaffected throughout. On the 23d, a woman in the prison portion of the building was attacked, and died in the course of four hours. Other five cases followed on the 25th, 26th, and 31st. It was stated that all these last-mentioned cases occurred in women who had carried the corpse of the patient on the 18th to the grave; but that the case on the 23d was in a woman, who had had no communication whatever with the patient either during life or after death. There had been a slight tendency to bowel complaints among the prisoners prior to the case on the 18th. On the 2d of January, the lunatic, confined in the cell intermediate between that of her who died and of her who had been removed, was attacked; the case proved fatal. Of the officers and their families, amounting in all to eleven, no one suffered even from diarrhœa.

The ratio of mortality in the two cholera hospitals, at the opposite ends of the town, was about one half of the numbers admitted. During the first two or three weeks, it amounted to nearly two thirds in the Soho Mills Hospital near the workhouse. Very many expired soon after admission, having been brought in a state of or verging to collapse. Several were already dead, ere they reached the hospital.

Lastly, there were not above three or four deaths among the well-conditioned whites, and the mortality among the respectable brown population was also very small.

It will have been seen that there was a partial recurrence of the epidemic in Montego Bay, in October 1851.

VII. *Lucea*, the principal town in the parish of Hanover, stands at the head of a beautiful horseshoe bay, pointing nearly due north. At the opening of the bay, on its west or leeward side, are the barracks, upon an elevated rocky projection which runs some way into the harbour, and is finely exposed to the sea-breeze. From this point the road leads down by the shore, with a considerable slope, to the town which is situated in the bottom. In its rear the land rises abruptly to a considerable height, and hems it all round, leaving but a narrow strip of land on to the beach. The soil is generally loose and sandy, riddled in many places with the burrowing of land-crabs; and water is found at a depth of two or three feet from the surface. At the east side of the town there is a foul quagmire, with large pools of stagnant water, from which the most disgusting effluvia are exhaled. Doubtless the greater portion of the site, on which Lucea stands, was originally a swamp. In the opposite direction, as you enter the town from the westward, there is a peculiar nuisance which is little less offensive than the morass. It arises from the quantity of decaying seaweed, loaded with much animal débris, on the beach under the cliff; the stench is quite putrid, and is wafted up to the houses on the adjacent high ground and on towards the barracks, so that the inhabitants are often obliged to keep their windows, facing that way, closed. The nuisance is aggravated by there being a small fishing station there, the garbage being often left on the beach to putrefy.

The town consists of one main street, with others diverging from it on either side. There is, however, little regularity in the arrangement of the buildings. Nothing can well be worse than its general sanitary condition. Into the gutters by the sides of the streets and lanes, all sort of filth finds its way; and their fetid contents remain undisturbed until they are either partially washed down by heavy rain, or are gradually exhaled into the atmosphere, or slowly soak into the loose soil. None of the streets are paved, and are of course in wet weather avenues of pappy mud. There are two are three wide channels or open sewers, which cross the main street in the direction of the sea; but, in consequence of the insufficiency of the fall, they become at their lower end merely lengthened ditches of stagnant putridity. It need scarcely be added that there are abundant sources of offensiveness in and around most of the dwellings; many of them having no domestic conveniences, all their nastiness is cast out in front of their doors. The unpaved court-yards in rear of others being occupied with stables, pigsties, dog-kennels, &c., are usually belittered with impurities. Here and there may be seen holes in the walls near the ground, to let the fluid filth drain out as it best may. Altogether, Lucea struck me as one of the most unwholesome towns in the island. Its natural situation is unfavourable. From its being hemmed in by the elevated land around it, the fetid exhalations are never thoroughly blown away by the sea-breeze, but are only whirled about in different directions; while not a few of the houses are nearly excluded from its influence by others, interposed between them and the shore. But it is when the atmosphere is still, and more especially at night, that the stranger is sensible of the tainted atmosphere which he breathes. Upon walking down from the barracks where the air is then probably cool and refreshing, he at once experiences, as he enters the town, a close and nauseous oppressiveness.

The water, used by many of the lower inhabitants, is often so largely charged with decomposing animal matter that it will blacken white paint in the course of a few days.

The town of Lucea, as may well be imagined, has generally proved an unhealthy locality. Diarrhœa and dysentery are of very frequent occurrence, and there is usually a great deal of remittent fever, especially in the autumnal months. In 1837, a very fatal typhoid fever prevailed among the inhabitants. It was always foretold by those who were acquainted with the place that, if cholera made its appearance there, it would prove most destructively fatal.

The earliest cases of cholera in Lucea occurred on the 3d of December, when a boy in the barracks and one of the inmates of the poorhouse (which is

situated on the beach near the barracks) were seized. Both patients recovered. The next cases were on the 7th, on which day two persons in the town were taken ill; they also recovered. About this time, diarrhœa became prevalent. On the 12th, two sailors, who had come in an open boat from Montego Bay, were attacked soon after their arrival. They were taken to the cholera hospital on shore, and died there. Some parties alleged that the disease was introduced by these men into the town, but this idea is contradicted by the facts already mentioned; and all the resident medical men, including Dr. M'Bean the medical officer of the barracks, were agreed as to the impossibility of tracing the origin of the epidemic. On the 18th, and again on the 20th, a case occurred; but neither proved fatal. It was on the following day that the first death took place among the inhabitants of Lucea, in a child of a decent man living in Mr. Hayward's yard. The house was clean within, but at the back of it was a wide gutter or drain, which served as a receptacle for all the domestic filth from this and the adjacent houses. Its surface, when I visited the place, was bestrewed with excrement. The father of the child had been affected with diarrhœa the week before. On the same day, the 21st, a corporal was attacked suddenly in the Barrack Square; he died in the course of seven hours. Diarrhœa now became very general among the soldiers. The barrack-gates had been kept strictly closed for more than a week before, and all communication with the town prevented, as far as possible.

The progress of the pestilence in the town is shown by the following list of fatal cases.

Date.	No.	Date.	No.	Date.	No.	Date.	No.
1850 Dec. 12	2	Brought up	46	Brought up	229	Brought up	310
„ „ 21	1	1851 Jan. 2	2	1851 Jan. 13	13	1851 Jan. 24	1
„ „ 22	1	„ „ 3	28	„ „ 14	11	„ „ 26	4
„ „ 23	2	„ „ 4	15	„ „ 15	6	„ „ 27	2
„ „ 25	1	„ „ 5	15	„ „ 16	9	„ „ 28	4
„ „ 26	3	„ „ 6	9	„ „ 17	14	„ „ 30	6
„ „ 27	1	„ „ 7	10	„ „ 18	9	„ „ 31	4
„ „ 28	5	„ „ 8	32	„ „ 19	4	„ Feb. 1	2
„ „ 29	4	„ „ 9	17	„ „ 20	6	„ „ 2	1
„ „ 30	10	„ „ 10	22	„ „ 21	4	„ „ 6	1
„ „ 31	9	„ „ 11	8	„ „ 22	2	„ „ 7	1
1851 Jan. 1	7	„ „ 12	25	„ „ 23	3		
Carried forward	46	Carried forward	229	Carried forward	310	Total	336

Recapitulation.	Number.
Died in December 1850 - - - -	39
„ January 1851 - - - - - -	292
„ February 1851 - - - -	5
Total deaths from 12th Dec. 1850 to 7th Feb. 1851 - -	336

Few places suffered more severely than Lucea, a full third of its inhabitants having perished. Dr. Parkin, who arrived there on the 7th of January, says, in his interesting pamphlet, that the applications for assistance were so great that he was "arrested at almost every door, while all that could be done, in the majority of instances, was to give a hasty opinion and pass on."

Doctors M'Bean and Pott remarked that there was always an aggravation in the virulence and fatality of the disease after a rainy night.

The mortality among the unhappy victims who were taken to the cholera hospital was excessive; nor can this be wondered at when we regard its situation at the side of stagnant ditches, its extreme overcrowding, and the utter want of nurse attendance upon the sick. They were laid down upon the floor but to die, many of them without even a drop of water at their side to slake their intolerable thirst. Several had expired before they reached the door of the hospital, and not a few within an hour or two after admission into this "dead-house," as it came to be called.

Among the victims were five or six of the white inhabitants. Of these, one was notoriously intemperate, a second was upwards of seventy years of age, and

two of the others were living in most unhealthy localities. In the case of young Mr. Stainsby, the son of the rector, the attack appears to have been consequent upon excessive fatigue from his unremitting attention to the sick poor, through the worst of the visitation. The self-sacrificing devotion of this young gentleman, in common with many others of the more respectable inhabitants, deserves a passing tribute of praise.

There was a great deal of sickness and no small amount of mortality among the residents on the high bank overlooking the bay, from the barrack-ground to the further extremity of the town. The casual observer might fancy that the locality, from being elevated and well exposed to the sea-breeze, would have been salubrious, and much more exempt than it proved to be; but a closer inspection at once discovered the causes of its unwholesomeness. Many of the inferior houses were filthy inside and out, and they were surrounded with patches of neglected boggy land and pools of stagnant water. Moreover, within the distance of three quarters of a mile there is that foul morass to which allusion has been made on a previous occasion, and the malaria from which must be wafted in the direction of the houses, whenever the sea-breeze veered from its accustomed quarter to the westward. The fœtid effluvia from the decaying ooze upon the beach below were much complained of by many of the residents.

In one house, situated on the bank immediately in rear of the town, the mortality was very great, most of the inmates who remained in it being swept away. Besides much rank vegetation all round it, and the existence of decaying rubbish in the court, &c., the exhalations from the abounding sources of impurity beneath could not fail to be blown right upon it by the breeze from the bay. It has always been notorious as a fever spot.

There are two or three facts connected with the occurrence of the disease in the prison which deserve notice. It is situated immediately to leeward of the barracks, and therefore quite removed from the town. During the first week of December, there was a tendency to bowel complaints among the inmates. On the 3d, the same day on which the first case in the barracks occurred, one of the prisoners was attacked with smart vomiting and purging; he, however, speedily recovered. Most of the prisoners were discharged in the course of the following week. The first fatal case occurred on the 30th in the wife of one of the turnkeys, and ten days subsequently the only three prisoners then in the gaol were attacked; two recovered, and one died. These four patients occupied two apartments at one end of the building; the prisoners on the ground-floor cell, and the woman in the room immediately over it. In the rear, and right under the grated slits or openings in the back wall of the cell, and under the window of the room above, was a foul pigstye and some filthy poultry-coops. There was also a privy within a few feet of the door of the cell, and a well in its immediate vicinity.

The crews of two or three vessels, which were in the bay during the greater part of the epidemic, entirely escaped. Nor did it attack the adjacent negro settlements of Elgin and Johnson Towns, on the opposite side of the harbour, for three or four weeks after it had broken out in Lucea; although there was not only constant communication between them, but they are, moreover, nearer to Montego Bay and other ports on the coast to windward, where the disease had been prevailing for many weeks. A good deal of diarrhœa, however, existed among the people on these settlements about Christmas and some time afterwards.

The Epidemic amongst the Troops, &c.

The average annual strength of the military force in the island, during the year from the 1st of April 1850 to 31st March 1851, amounted to 1,770 men. Of these, 756 were white and 1,014 were black troops. The average number of officers was 73, of women attached to the regiment 154, and of children 233.

The entire number of cases of cholera during the year among the white troops was 51, of which 29 were fatal; and among the black 194, of which 99 were fatal. Five of the officers are reported as having been attacked with the epidemic, but only one died. This death occurred in Spanish Town at the very commencement of the outbreak there. Among the women there were 23 attacks and 16 deaths, and among the children 21 attacks and 13 deaths.

The ratio of the mortality among the troops was thus between seven and eight per cent., while that among the officers was not one and a half per cent. In estimating the per-centage of cases and deaths among the white troops, it is to be remembered that, out of between five and six hundred of these at Newcastle and Maroon Town, only five were attacked and only two died of cholera during the military year 1850–51. The immense majority of the cases, therefore, among the white troops took place at Port Royal.

As the mortality appeared to me to be considerably higher than might have been expected among men who, it is generally imagined, are always so well lodged and cared for as the soldiers in the British army, my attention was naturally drawn to ascertain the probable causes which might account for the result in question. These, I cannot but think, are on the whole sufficiently obvious; and, being capable of easy correction or removal, ought surely not to be allowed to continue. I have inserted in the Appendix (E.) the results of my observations and inquiries on the state of some of the barracks, &c. &c.

The Garrison at Port Royal.

The garrison consisted, at the time of the appearance of the cholera, of detachments of the Royal Artillery (white troops), with additional African gunners, and of the 3d West India regiment (black); besides women, children, followers, and pioneers. The entire number of souls amounted to between three and four hundred.

The gates of the barracks were closed upon the appearance of the disease in the town.

The first case of cholera in the garrison was on the 15th of October, in a white soldier. He was a prisoner at the time, in confinement for drunkenness. He recovered, having been at once brought under medical treatment. Next day two women were attacked; both died the same day. The subsequent progress of the disease in the garrison will be shown by the table appended. At first, the black troops suffered more severely than the white. On the 28th, the disease broke out with aggravated intensity. From the afternoon of that day till the following morning there were no fewer than sixteen seizures, of which twelve proved fatal. Its ravages continued till the 1st of November, when the whole of the available men, with some women and children, were removed to Stony Hill barracks; there had been up to this time seventy-two persons attacked, of whom the large proportion of fifty-four died. The march, through a swampy country, of about twelve miles was performed under incessant heavy rain, with no refreshments provided for the men.

The panic among the men was extreme, and many of them, especially the European troops, gave way to excessive intoxication. When brought to the hospital, it was sometimes difficult to determine whether the men were suffering from an attack of the epidemic, or from the results of drink or of fear. The black soldiers, the moment they were seized, gave themselves up at once as lost; and it was only with great trouble and much expostulation that they could be induced to take medicines of any kind.

After the removal of the troops to Stony Hill, where they continued till the 23d of December when they returned to Port Royal, sixteen cases in all of cholera occurred. Of these, eleven proved fatal. All the fatal cases took place within eight days after the removal of the troops. Two occurred on the 2d November; the patients had had nothing to eat throughout the entire day of the 1st during the march from Port Royal. There were also twenty-four cases of diarrhœa, but all these did well. Cholera had appeared a few miles beyond or to the north of Stony Hill, before the troops were sent there. Amongst those left at Port Royal, including some women and children, there were eight fresh cases, half of which were fatal. The last was on the 24th of November, a fortnight having intervened from the date of the one preceding. On the 5th of December, a soldier of the 97th was landed from the Apollo troop ship, having been suddenly attacked while the vessel was getting under weigh. He recovered. This was the last case at Port Royal.

None of the officers of the garrison nor any one of the hospital staff, although the latter were excessively fatigued from incessant duty during the prevalence of the epidemic, and both had communicated freely with the town, caught the disease.

RETURN of the Cholera among the Troops at Port Royal from the First Appearance of the Disease.

DATES.	Royal Artillery.			African Gunners.			3d W. I. Regiment.			Women.			Children.			Followers and Pioneers.		
	Attacked.	Recovered.	Died.	Attacked.	Recovered.	Died.	Attacked.	Recovered.	Died.	Attacked.	Recovered.	Died.	Attacked.	Recovered.	Died.	Attacked.	Recovered.	Died.
1850 October 14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 15	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 16	–	–	–	–	–	–	–	–	–	2	–	2	–	–	–	–	–	–
„ „ 17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 19	–	–	–	1	–	1	1	–	1	–	–	–	–	–	–	–	–	–
„ „ 20	–	–	–	–	–	–	2	1	1	–	–	–	–	–	–	–	–	–
„ „ 21	1	–	1	–	–	–	3	–	1	–	–	–	–	–	–	–	–	–
„ „ 22	–	–	–	1	–	1	1	–	3	–	–	–	–	–	–	–	–	–
„ „ 23	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–
„ „ 24	3	3	–	–	–	–	2	1	1	–	–	–	–	–	–	1	–	1
„ „ 25	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–
„ „ 26	–	–	–	–	–	–	2	2	–	1	–	–	–	–	–	–	–	–
„ „ 27	2	1	1	–	–	–	2	1	1	–	–	1	1	–	1	–	–	–
„ „ 28	7	1	5	5	–	4	2	–	1	–	–	–	1	–	1	1	–	1
„ „ 29	2	–	1	5	–	6	3	–	3	–	–	–	1	–	1	–	–	–
„ „ 30	1	–	3	3	–	3	–	–	–	1	–	1	1	–	1	–	–	–
„ „ 31	4	2	2	2	2	–	4	–	3	2	–	2	1	–	1	–	–	–
„ Nov. 1	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
„ „ 2	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
„ „ 3	1	1	–	–	–	–	–	–	1	–	–	1	2	–	2	–	–	–
„ „ 4	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 7	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–
„ „ 8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 9	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ 24	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–
Total -	25	11	14	17	2	15	25	5	20	7	–	7	8	1	7	2	–	2

The women and children were lodged in a building at a short distance from the barracks. It was much over-crowded, and far from being clean at the time. It contained nine married men, with their wives and fifteen children. Of the seven women who died, five were white. The seven children, who died, were children of the Royal Artillery-men.

TABLE showing the comparative Number of Attacks among the Men occupying the Upper and Lower Floors of the Barracks and other Buildings in the Barrack Yard.

	Upper Floors.				Lower Floors.			
	No. of Occupants.	Admitted.	Recovered.	Died.	No. of Occupants.	Admitted.	Recovered.	Died.
Royal Artillery -	120	25	11	14	6	—	—	—
97th regiment - -	—	—	—	—	—	—	—	—
A. R. A. gunners -	30	8	2	6	28	9	—	9
3d West India regiment.	—	—	—	—	92	25	5	20
Officers - -	7	—	—	—	1	—	—	—
Women - -	12	5	—	5	15	2	—	2
Children - -	23	8	1	7	17	—	—	—
Followers and pioneers.	—	—	—	—	9	2	—	2
Total - -	192	46	14	32	168	38	5	33

DURATION of Disease among the Troops at Port Royal.

ROYAL ARTILLERY.

7 died within 6 hours.
2 „ within 7 hours.
2 „ within 9 hours.
1 „ within 15 hours.
1 „ within 20 hours.
1 „ within 48 hours.

AFRICAN GUNNERS.

2 died within 5 hours.
4 „ within 6 hours.
2 „ within 7 hours.
1 „ within 8½ hours.
1 „ within 10 hours.
1 „ within 11 hours.
2 „ within 12 hours.
1 „ within 15½ hours.
1 „ within 24 hours.

3D WEST INDIA REGIMENT.

2 died within 4 hours.
2 „ within 5 hours.
5 „ within 6 hours.
4 „ within 7 hours.
1 „ within 9 hours.
1 „ within 12 hours.
1 „ within 15 hours.
1 „ within 22 hours.
1 „ within 24 hours.
1 „ within 3 days.
1 „ within 5 days.

WOMEN.

1 died within 24 hours.
2 „ within 2 days.
4 „ within 4 days.

The children all died within 24 hours, or upon the day on which they were attacked.

Cholera in the Naval Hospital at Port Royal.

When cholera appeared in Port Royal, there were thirty patients in the Royal Naval Hospital; most of them far advanced towards convalescence from fever, contracted in Her Majesty's schooner "Bermuda," at Grey Town, Nicaragua. In one of the cases there was a marked tendency to general depression, accompanied with nausea and vomiting. The "Bermuda" arrived on the 3d, and the patients were sent on shore on that and the following day.

During the first week of the epidemic, four cases of cholera were admitted into the hospital from the dockyard; the first on the 10th, the second on the 11th, and the other two on the 13th. The patients were placed in the same wards with the convalescent seamen from the "Bermuda." None of the latter, nor any one connected with the institution, was attacked.

In the following week, however, things were less fortunate. Her Majesty's ship "Indefatigable" had arrived from Grey Town, with an immense number of fever cases on board. No fewer than 121 were sent on shore to the hospital.*

The majority of them were in a most debilitated state. They did not convalesce well, and most of them became affected with diarrhœa. Seven died of the fever.

The first case of cholera among the inmates of, or those attached to, the hospital was on the 14th in the person of the cook, an old discharged soldier. On the 16th one of the nurses, and also one of the washerwomen, an old debilitated creature, were attacked. It was at this time that diarrhœa became prevalent among the patients in the hospital. On the 17th, one of the men from the "Indefatigable" was seized.

There were, in all, forty-three cases of cholera treated in the hospital; and of these, thirty-three proved fatal. Of the entire number, twenty-one patients were admitted with the disease already more or less advanced, and twenty-two were from among those labouring under fever at the time. Of the former (four of whom were received from the dockyard, nine from the "Indefatigable," and eight from among boatmen and others belonging to the hospital establishment), only two recovered. Of the latter, thirteen died. There was also a fatal case in the person of a man, who had been sent from the ship to the hospital as a nurse.

It is to be observed that the disease had developed itself spontaneously on board the "Indefatigable," the frigate not having been allowed communication with the town. Of twenty-six persons employed as nurses during the epidemic, six were attacked with cholera and two with diarrhœa. Five of the former died.

* It was a matter of general remark that the ventilation of this fine frigate was notoriously defective, owing partly to the size of the hatchways being smaller than usual, in order that more space might be given to the guns! The smell between deck was often nauseously offensive. Such disregard to the health of a crew, and this too in a tropical climate, is, I fear, but too common on board many of our ships of war.

They were all black men, taken from the same class of natives who were then dying in numbers in the town. Their duties necessarily involved excessive fatigue, and many of them were labouring under the utmost alarm. Of eleven washerwomen employed in the hospital, only one was attacked. The case, as already stated, proved fatal.

Of eight boatmen in the service of the establishment, three were attacked, and one died.

None of the medical staff suffered, with the exception of Dr. Johnston, who had a severe attack of diarrhœa, which he himself attributed more to fatigue and mental anxiety than to any other cause.

The greatest number of persons in the hospital, at any time during the continuance of the epidemic, was on the 16th of October, on which day there were 128 patients, 51 nurses, &c., 5 medical officers, 2 clerks; in all 186.

Three cases occurred on board the commodore's ship "Imaum" lying in the harbour; two of these were clearly the result of excessive intemperance on shore. The disease showed no tendency to spread to others of the crew.

On the 13th of November, before the pestilence had quite ceased in Port Royal, Her Majesty's sloop "Persian" arrived from Grey Town, with her crew in a most sickly condition. She had lost many of her men from fever while there, and during the voyage to Jamaica; and, on her arrival, almost every one of her officers and people were either affected with agueish ailments, or with debility from former attacks of fever. Upwards of fifty sick were sent to the hospital, many of them in a very enfeebled state. The "Persian's" patients were placed in the same wards in which cholera patients had recently died, and which still contained convalescents from the disease, bedside to bedside with the latter. They were, of course, attended by the same nurses and medical officers. No inconvenience followed; and, on the whole, the recovery of the new patients was very favourable. Only one man died. He was admitted moribund with fever.

"To recapitulate," says Mr. Watson,—"'Bermuda's' people, being nearly "restored to health before cholera appears, lose only one man by cholera. The "'Indefatigable' comes in when the disease is raging with the utmost "virulence, and suffers very severely. The 'Persian' arrives when cholera "has ceased, or nearly so, on shore; and although her patients are exposed to "every imaginable source of contagion, they totally escape contamination, and "convalesced as favourably as such patients usually do."

Nothing occurred during the outbreak to indicate, in the opinion of Dr. Johnston or of Mr. Watson, that the disease had been communicated from the sick to the healthy.

Kingston Barracks, Up Park Camp, &c.

The earliest case among the troops (black) in Kingston barracks was on the 2d of November. During the following three weeks, twenty-six fresh attacks occurred; and of these, one half proved fatal. None of the officers suffered.

The disease had appeared at Halfway Tree and at the Cross Roads near to the Camp, for some days before any one was attacked in the cantonment. This was on the 2d of November, when one of the black women attached to the 1st West India regiment was taken ill. For a fortnight previously, diarrhœa had been prevalent among both officers and soldiers. The barrack gates had been strictly closed, and none of the soldiers or women had been permitted to leave the garrison, so that no communication could be traced between the first case on the 2d and any infected person or locality. The quarters in which the woman, with many others, lived, were on the ground floor, crowded, badly ventilated, and far from being so clean as they might have been. Such, indeed, is the general character of the quarters occupied by the married men and their families. The patient's husband and her three children remained exempt. On the 3d, another woman was attacked. She lived in a room 300 yards at least distant from the former patient, and there had been no communication between them. The next case was on the 6th in a soldier. This was followed by one on the 7th, and another on the 10th; after which date the attacks became much more numerous and throughout the entire garrison, the disease confining itself to no particular locality. Its chief stress was from the 11th to the 20th. It then suddenly abated, the cases becoming much less numerous, and gene-

rally also more amenable to treatment. Two prisoners, recently removed from Newcastle barracks, were attacked and died on the 24th. Six cases occurred during the first fortnight of December; and of these, two proved fatal on the 15th. After that date there was a complete lull till the 12th January, when a soldier of the 97th regiment was attacked. This case was followed by another in a black soldier on the 20th. Both cases were fatal.

The strength of the garrison, &c., at the outbreak of the disease, will be seen by the following table, which also shows the relative number of attacks, and their results, among the troops occupying the upper and lower floors of the barrack buildings.

	Upper Floors.				Lower Floors.			
	No. in Upper Floors.	Total admitted.	Discharged cured.	Total died.	No. in Lower Floors.	Total admitted.	Discharged cured.	Total died.
Royal Artillery	14	1	—	1	—	—	—	—
97th regiment	20	5	1	4	—	—	—	—
1. W. I. regiment	170	22	12	10	166	26	12	14
2. W. I. regiment	70	8	4	4	—	—	—	—
Officers	14	1	1	—	—	—	—	—
Women	45	8	6	2	45	1	—	1
Children	57	2	—	2	—	—	—	—
Followers and pioneers	20	5	3	2	18	5	3	2
Commissariat department	1	—	—	—	—	—	—	—
Total	411	52	27	25	229	32	15	17

N.B.—The women were on lower floors to 3d of November, on upper floors from that date.

One of the officers was attacked; but, by being brought under treatment before collapse ensued, he speedily recovered. Many of the others were affected with diarrhœa.

None of the hospital orderlies suffered; and only one of the soldiers engaged in attending the patients, rubbing their limbs, administering the medicines, was seized. He recovered. The number of these men amounted to twenty at least. Of the persons, employed in washing the bed and body clothes of the sick, all escaped. Dr. Macarthur made particular inquiries upon this point.

Two men of the 1st West India regiment, who were in hospital for other diseases, were attacked with cholera. One died. "But no circumstance," says Doctor Macarthur, "was observed which could give me the slightest reason to "believe that the disease was propagated from any infected person, as the sick "labouring under other disorders were completely separated from those suffering "from cholera."

Upon the outbreak of the pestilence at Up Park Camp, the like baneful excesses in the use of spirituous liquors took place, I was informed, among the troops there, as had been witnessed at Port Royal, and tended in no small degree to aggravate the fatality of the distemper.

After the fatal case on the 20th of January, the garrison remained free from any decided indications of the disease till the last day in April. In the meantime, the 1st West India regiment had been moved from the camp to Spanish Town, and the head quarters of the 3d West India regiment had arrived from Demerara on the 18th of April. Twelve days subsequent to this date, "a solitary "well-marked case of spasmodic cholera was admitted into the hospital, and "at the same time numerous slight cases of colic and diarrhœa were observed, "attributable (it was believed) to the change of water, which had frequently "been found to occur on the arrival of fresh troops." The patient recovered. The sickness speedily ceased, and the health of the troops continued to be tolerably good until the 5th of June. During May there had been several cases of diarrhœa, but they readily yielded to treatment. On the day mentioned, two men were attacked with most malignant cholera. Both died; one within two hours after admission into the hospital. It was found, upon inquiry, that both men had been seized with vomiting and purging the night before, and that one of the men had taken a cold bath on the following morning. Other cases rapidly followed, and continued to occur until the 21st of the month, when

the barracks were whitewashed and fumigated. Dr. Summers, the surgeon of the regiment, recommended that the troops should be moved from the barracks and put under canvas; but his advice was not then followed. There was a lull for a week; and again the disease broke out on the 28th, with alarming severity. The men were now immediately camped out in tents on the parade ground to the south of the barracks, and with the happy result of at once arresting the pestilence. "No sooner," says Deputy Inspector Doctor Maclean, "were the troops removed from the barracks where the scourge was "prevailing with excessive malignancy, and placed under canvas, than the "disease immediately disappeared from the cantonment." Not a single case was admitted from the encampment, with the exception of one in a man who had been released only the day before from the Penitentiary, where there was a good deal of choleraic disease at the time.

The total number of attacks upon this occasion amounted to 53. Of these 32 were fatal, out of a force of 292 men. Of four women who were attacked, two died. Two white children also fell victims. The virulence of the distemper was thus extreme, greater indeed than in the preceding November. Dr. Summers remarks in his report that five soldiers were seized while on guard, and that none of these cases recovered. Particular allusion is likewise made by him to the great mortality, which occurred among the inmates of a confined and ill-ventilated room, occupied by the officers servants and their families. Several of the officers, and almost all the European non-commissioned officers, suffered from choleraic diarrhœa; but they all recovered.

The remarkable circumstance, connected with this outbreak of the disease, is that the attacks were confined exclusively, with a solitary exception, to the companies of the regiment which had recently arrived from Demerara; whilst the company which had been in the island during the prevalence of the epidemic,—having been at Port Royal upon its appearance in October and subsequently moved to Up Park Camp,—remained almost entirely exempt, although occupying the same rooms as their comrades of the other companies. The single exception occurred in a man, who had been subject to attacks of dysentery.

It was imagined by some persons that the outbreak might be attributable to a fatigue party of the regiment having been, a few days prior to the 5th of June, engaged in clearing out and preparing some of the barrack-rooms, which had been occupied by the troops during the sickness in the previous November, for the reception of the 16th regiment expected from the Mediterranean. But, independently of these rooms having been thoroughly whitewashed and fumigated immediately after the visitation, it so happens that the man first attacked had not been one of the party in question. Moreover, as has been stated above (page 32), there was much choleraic disorder at the time, not only in Kingston, but in many localities around the camp.

During the quarter from July to the end of September the epidemic influence continued to be felt, although in a milder degree, in the cantonment. "In the "3d West India regiment, the principal diseases," says Dr. Maclean, "have "been fevers, rheumatism, catarrhs, cholera and bowel complaints; the latter "from their prevalence, and apparent connexion with the epidemic which "occurred in the preceding quarter, of which sporadic cases occasionally still "make their appearance, have required particular care and observation. Ten "cases of cholera have been treated, being generally those which remained "from the preceding quarter. Three cases only have been admitted since the "epidemic may be said to have ceased." Of these three sporadic isolated cases, two were fatal; one on the 21st of August, in a recruit recently arrived from Sierra Leone, and the other on the 21st of September; both in soldiers of the 3d West India regiment. There were also, during this quarter, numerous cases of choleraic diarrhœa and colic among the troops at the camp.

Among the troops (black) at *Spanish Town*, the earliest case occurred on the 20th of October in one of the Governor's guard; he recovered from the attack, but died subsequently from peritonitis. This man had been often in hospital before, for bowel complaints. The first case in the barracks was not till the 30th; the patient died on the second day. About the same time, one of the officers was attacked; he sunk on the sixth day under the secondary symptoms. This was the only fatal case among the officers, throughout the whole epidemic in the island. The disease continued in the barracks for a fortnight,

during which time there were about thirty cases of cholera; of these, one third proved fatal. The strength of the garrison was about 270 men.

In the barracks at *Montego Bay*, where the average strength is about seventy men, there were in all fifteen men attacked; of these, four died. The first cases occurred on the 16th December, on which day four soldiers (black) were simultaneously taken ill. All the other seizures occurred during the next six days, after which the disease ceased. None of the sick orderlies or attendants suffered.

In August 1851, there was a good deal of influenza among the soldiers; it was very prevalent in the town at the time. Cholera partially reappeared there in October. Only one case occurred among the troops, in an officer's servant; he was attacked on the 5th November and died on the 7th.

At *Falmouth*, the mortality among the troops (black), which averaged between seventy and eighty in number, amounted to four out of ten attacked. Besides these deaths, one woman and three children died. The first case was on the 19th November, a week after the disease had appeared in the town; the next did not occur until the 10th of December. Major Finlay, the commander of the garrison, informed me that the barracks are infested with foul smells, not only from the decaying seaweed on the beach, but also from the filthy localities of the town. Dickson's yard, where the disease first manifested itself, is very near to the barrack gates.

Considering the smallness of the garrison at *Lucea*, the proportion of attacks and deaths there was larger than at Montego Bay or Falmouth. The earliest case was on the 3d of December—several days therefore before the town was infected—in a boy about ten years of age, son of one of the soldiers; he recovered. There was no tendency to diarrhœa at the time, either in barracks or in the town. The second case did not occur until the 21st, in an African soldier; he suddenly dropped down in the barrack square while returning from the guard to the barrack room; he died in seven hours afterwards. The third case was on the 8th of January, also in a soldier; he was attacked in the guard room, but he had been ailing the day before with diarrhœa and cramps, which he had not reported; he died. On the same day a European, belonging to the commissariat, was seized soon after returning from the town in a state of intoxication; he died next day in a house outside the barracks. The fifth patient, also a drunkard, was taken ill on the 12th; he recovered. Another case, fatal, occurred on the 18th; and another, which recovered, on the 24th. Besides these cases, a child died in the barrack room on the 15th; there were also several cases of choleraic diarrhœa in the garrison, which consisted of thirty-three soldiers, exclusive of some women and children. Dr. M'Bean observed nothing to indicate the transmission of the disease from one person to another.

At *Port Antonio*, three cases occurred within the barrack ground. The first was as early as the 12th November, and therefore a considerable time before the pestilence appeared in the town. The man was suddenly attacked on the parade ground, whilst on guard. No other case occurred till the 17th of January. The third took place in a woman, a week subsequently. All the cases did well. The garrison consisted of two officers and twenty-five soldiers; there were also two women and eight children. No attempt was made to confine the men to barracks, during the prevalence of the disease in the town.

Barracks at Newcastle and Maroon Town.

In a preceding page, 15, will be found an account of the outbreak of the pestilence along the mountain road, which leads to the cantonment at Newcastle.

The first case in the garrison there was on the 30th of November, in a private of the 97th, who had been absent without leave on the night of the 27th. He was an intemperate character, and had doubtless been at Middleton, where the epidemic was then prevailing. He was on piquet duty, the day of his seizure. In the afternoon he became affected with vomiting and purging, but did not attract notice till he fell down from weakness. Collapse supervened, and he died 12 hours afterwards. A woman of the regiment was attacked shortly after this case, but she recovered. No other case occurred till the 17th of December; and this also was in a man of dissipated habits, who had absconded from the cantonment on the 9th, and did not return till

the 12th. He was in confinement at the time when he was attacked, on the 17th. He recovered. It may be worthy of passing notice, that " this " man imputed his illness to the foul smell arising from the urine-tub in the " lock-up room, in which another man had passed his excrement during the " night." The fourth and last case was on the 31st December, in a corporal of the regiment, who had come up only a couple of hours before from Up Park camp, where he had been on duty throughout the prevalence of the disease among the troops there. He recovered. Of 21 individuals who attended night and day on the above cases, none experienced any inconvenience. Dr. M'Illree the surgeon of the regiment, and the assistant surgeon, had also attended many cases at Middleton and at the Gardens, while the disease was raging in these places, without detriment to the garrison upon their return. With the exception, indeed, of the cases recited above, the troops remained in a very healthy condition. The average strength amounted to about 400 men, including officers. There were also 30 women, and rather more children, within the cantonment. As strict a sanitary cordon as possible had been maintained around the cantonment from an early period in November; and to this precaution, the comparative immunity of the garrison was attributed by some.

It was on the 19th of July that the left wing of the 16th regiment arrived at Port Royal from Corfu, the head quarters having arrived about six weeks previously and been moved up at once to New Castle, to relieve the 97th regiment which proceeded to Halifax. On the 21st they marched from Kingston to Up Park Camp, and occupied for that night the tents which had been just vacated by the 3d West India regiment, which had been suffering so severely three weeks before. Next day, they proceeded on to New Castle. On the 27th, a child of one of the soldiers was attacked with cholera, and died. For a week previously, however, there had been a good many cases of bowel complaints in the garrison; and diarrhœa and influenza were rife at the time in the parish of St. George, immediately to the north of the mountain range on which the cantonment is situated. No other case of cholera occurred until the 4th of August in a soldier, who had had no communication with the child, and did not belong to the detachment of the regiment which had rested at the camp. Next day there were two attacks, besides several cases of diarrhœa, some of which were of a decidedly choleraic character. It was not till the 10th, that the outbreak became general. By the 12th no fewer than 29 malignant cases had occurred, and 11 deaths had taken place. There were also numerous cases of choleraic diarrhœa. For another week the attacks continued; and, then, there was an interval of six or seven days without any fresh case. In consequence of the overcrowded state of the barrack-rooms, many of the troops were put under canvas. The measure was attended with marked benefit. On the 24th one slight case occurred, and several of diarrhœa. On the 31st there was one fatal case. This was the last in the cantonment. All the deaths occurred in the 16th regiment, recently arrived in the island. The total mortality amounted to seventeen deaths, out of rather more than forty cases. The detachment of the Royal Artillery remained unaffected. None of the officers suffered.

The strength of the garrison consisted of 477 troops, exclusive of 38 women, 65 children, and 13 followers.

The circumstances, attending this severe and unexpected outbreak at the elevated station of Newcastle, are altogether so interesting that it is highly desirable that the reports of the medical officer of the troops should be published by the Army Board.

The history of the few cases at Maroon Town, in February, is very similar to that of the insulated attacks at Newcastle two months before. I am indebted to Dr. French, the medical officer of the garrison, for the particulars. During the prevalence of the disease in Montego Bay, several instances occurred of persons who had recently come up from the lowlands being attacked in the neighbourhood of the cantonment, and dying. On a few occasions one or two individuals, occupying the same hut with the deceased, but who had not been in any infected locality, were attacked soon afterwards. In no instance, however, did the disease spread further. Dr. French attended most of these cases himself. Meanwhile, a most rigorous quarantine was established and kept up around the cantonment; none of the troops being allowed to leave the garrison, and no one being admitted without being subjected to fumigation, and

detained for a considerable time in an apartment by himself. "It was on the "18th of November that the cordon was first established; it was on the 13th "of February that, accounts having reached us of the total disappearance "of cholera from the lowland and neighbouring districts, it was finally removed." On that day, a black soldier was sent down with a letter to Montego Bay, where he remained all night. On his return next day, he rested some time at Springfield, where the disease was believed to exist. He was attacked on the 15th. He recovered. On the 17th, another case occurred in a soldier of the 97th regiment. He also recovered. And on the 18th, another soldier of the same corps was attacked. He died. There were also eight cases of diarrhœa in the garrison. "A cordon was drawn around the hospital, and "the disease was confined until it was finally extinguished." None of the attendants on the sick were affected, with the exception of slight diarrhœa in one or two of them. It was doubtful whether the two soldiers of the 97th, who were attacked, had been out of the cantonment after the cessation of the quarantine on the 13th. They had been seen drinking with the man, who had returned from Montego Bay. The garrison consisted of 177 men of the 97th regiment, and 7 pioneers, exclusive of women and children.

It may not be undeserving of remark that, while the head quarters of the 16th Regiment at New Castle experienced a severe visitation of cholera in August, the two companies, which had been landed at Montego Bay and then marched up to Maroon Town, suffered about the same time very much from "fever of a serious and somewhat peculiar type, differing from what has "usually been observed to attack soldiers recently arrived in the tropics. It "was essentially a disease of debility, not permitting depletion or the free use "of purgatives, but in many cases requiring stimulants from the very first. "In all the serious cases, the convalescence was very slow, and the system "sank more under the influence of this comparatively mild form of fever than "that of the fatal epidemic of Barbadoes in 1848."

Influenza was very prevalent on the north side of the island about the time.

Influence of Elevation on the Spread of the Epidemic.

The circumstances, connected with the history of the epidemic in elevated districts, deserve a short notice. And first, of the *Moneague* district in St. Anne's, which, for its temperate climate and the fine exposure of its mountain pastures, is often resorted to for its salubrity. The first case there was in a gentleman's servant, who had returned the day before from Spanish Town. This was on the 26th of October. He was suddenly attacked in the market-place, and was at once sent to his master's house, a good many miles off, on Mont Diabolo. He recovered; and no other case occurred in the household.

On the 1st of November a person, who had also recently been at Spanish Town, was seized with choleraic symptoms near the Moneague. The case was not severe, and he speedily got well. His house was low and confined, and immediately in rear of it there is marshy plot. His family remained exempt. A week subsequently, however, a woman, who had acted as a menial servant in the house of the last patient, and lived close by, was attacked with bowel complaint. She recovered from this, but aborted, and sank from extreme weakness on the 11th. Two or three other cases occurred, within the next ten days, in the neighbourhood; but they all recovered. Meanwhile several cases, some of them fatal, took place at a negro settlement called the "Swamp," five or six miles distant. The first was on the 8th of November, in a man who had been at the Moneague at the beginning of the month.

There was a good deal of choleraic diarrhœa in, and around, the *Moneague* during November and the early part of December; but no severe case occurred at or about the large hostelry there, although travellers were continually arriving from Kingston, Spanish Town, &c., until the 9th of the latter month; when a young woman, who was acting as wet-nurse in a very large establishment, became alarmingly ill. Diarrhœa had existed for a day or two previously. She recovered, and no other person in the house was affected; nor did any other threatening case occur in the place, with the exception of two seizures in men who had come up from Rio Bueno where the epidemic existed, and who were attacked on the 19th and 20th December; they died. By far the most severe local outbreak of the disease occurred in a cottage, about a mile or so from the

Moneague. The house stands alone, and is well situated; the soil is dry. Although old, it was in its outward aspect much superior to most negro dwellings; nor was any accumulation of filth or rubbish about it. There were two apartments, neither of which was, however, floored. In one of these, which measured 10 by 7 feet across and between 7 and 8 feet in height, no fewer than twelve persons, men, women, and children, were in the habit of sleeping at night, with door and window openings closed. Only one, a child, escaped seizure with symptoms of cholera; and five of them died. These cases occurred between the 11th and 22d of December.

The entire number of deaths from cholera in the Moneague district, embracing a circuit of two miles in all directions, and containing a population of between 500 and 600, was fifty-two. The cases of diarrhœa were very numerous. Almost all the seizures occurred at night. By far the greatest number of the deaths were at the Swamp, and at another negro settlement called Hart's Run, in the rear of which there is a good deal of morass. Most of the houses are of a very inferior character, and the situation is altogether very unwholesome.

In the *Pedro district* in the same parish, and situated to the westward of the Moneague at an elevation of between 2,000 and 3,000 feet, only six cases of cholera occurred among a considerable population. All the cases were imported from the low lands, chiefly St. Anne's Bay and Ocho Rios, and occurred in separate dwellings, in each of which there were other inmates at the time. Five of the cases proved fatal. The first occurred on the 25th November, and the last on the 26th January. There was a good deal of diarrhœa in the district generally.

In the Clark Town district, on the road from the Moneague to St. Anne's Bay, the first cases occurred in the second week of November, and the disease continued to linger till the middle of January. The respectable residents and their families escaped entirely, with the exception of having slight bowel complaints. In some of the negro huts, as many as four and five of the inmates were swept off. Here, as elsewhere, these hovels are generally choked round with bush, and are often situated on the slopes of damp luxuriant ravines.

The history of the disease in the *parish of Manchester*, as given to me by Dr. Brooks of Mandeville, is as follows:—

Almost all the cases occurred in persons who had gone up from either Spanish Town, or from Parnassus and other places in Clarendon, where the disease was existing at the time. The earliest case occurred on the 31st October, in a miserable wattled hut, hid in bush, in the negro village of Knockpatrick. The last case in the parish was on the 29th of December. In a few instances, one or two of the inmates of the cottages where the patients were attacked and died were affected subsequently, especially when a wake was held over the dead body. Generally, however, the household as well as the immediate neighbourhood continued to be exempt, the disease showing no tendency whatever to spread. Many cases of severe diarrhœa and colic occurred. There was a prevalence of bowel complaints throughout the parish about the end of October, and during the months of November and December; and in two or three instances the cases assumed a decidedly choleraic character, as late as the end of the year. It is believed that not above fifteen or twenty cases, at most, of developed cholera occurred throughout the entire parish, with a population estimated at about 20,000. Three or four isolated cases, in parties recently returned from other parishes, occurred in the large village of Porus; but the disease ceased, so to speak, with the individuals attacked.

Besides being mountainous, Manchester is, on the whole, noted as a very dry district, often suffering extremely from drought. The rivers are few and small. It has generally been found a healthy parish. Mandeville, the chief town, at an elevation of about 2,000 feet, was formerly a military station. During the three years of 1833, 34, 35, only seven (white) died out of a force of 227 men stationed there.

In the *Santa Cruz mountains* in St. Elizabeth, several cases were taken up by parties from the plains, while the epidemic was raging at Holland, Lacovia, and other places in the neighbourhood; but in no instance did the disease show any disposition to spread, even to the other inmates of the houses where the persons attacked lay sick.

In the more elevated districts of Trelawny, there was comparatively very little severe sickness, although bowel complaints were frequent. As a very general remark, the localities, which in ordinary seasons are apt to suffer most from fever, were those where fatal cases of cholera occurred. The Rev. Mr. Claydon, alluding to several cases which had taken place in a particular spot, remarked that, "at all times he has found the atmosphere within the "houses of the negroes close and oppressive, and often sickening in the "extreme, especially when he has had occasion to visit them early in "the morning. He has repeatedly known three and four persons to sleep in a "shut-up place, not large enough for one. On one occasion, he found the "corpse of a person who had died from cholera in a room so small, that he "could with difficulty turn himself round within it. There was no opening but "the door. The man's wife was immediately sent away to a distance, and "fortunately escaped."

In the Highgate district of St. Catherine's, the character of the disease was remarked to be decidedly less virulent and rapidly fatal than in Spanish Town and the lowland districts. Very few cases proved fatal within less than twenty-four hours. Unfortunately, assistance was not called for in most instances where the patients died, until it was too late. "Humanly speaking," says the report of the Local Board, "almost every patient might have been saved, had assistance "been obtained three, four, or six hours sooner."

Epizootic Diseases.

My information on this subject is scanty; not from my having omitted to make inquiries respecting it, but from the very few facts which could be well ascertained.

At the Farm Pen, between Kingston and Spanish Town, between thirty and forty sheep died during the week when the epidemic raged most severely in the village. The animals were suddenly seized with shivering. They were slightly purged, pushed their heads into a bush, or lay down at once and died. Several of them were taken off in the course of a few hours. Mr. Wood, the lessee of the property, had never seen anything like the attacks before. He lost at the same time two dogs. They were attacked with shivering and vomiting, followed speedily by extreme prostration. One of them survived for three weeks; but the animal never fairly recovered. The hair had dropt off.

Mr. Taylor, of Good Hope Estate, lost upwards of a hundred sheep during the prevalence of the cholera in the adjoining districts. They were suddenly attacked with a pinching in the belly, which was spasmodically drawn up, followed by immediate prostration. Some died within an hour. Mr. Taylor had never witnessed such seizures in any previous year.

At Llandovery in St. Anne's, the sheep were similarly affected while the epidemic was in that district. No sickness was observed among the cattle and horses on the estate.

The following communication is from Mr. Hill of Spanish Town:—

"You expressed a wish that I should note for you the fact of a prevalent "disorder among sheep, coincident with the existence of cholera in St. David's. "Mr. Turner, the proprietor of a mountain farm on a line of hills overlooking "the sea, situated upon what De la Beche in his map sets down as porphyritic "conglomerate and trap rocks, with probably some portions of the farm "extending into the limestone that adjoins, found all his sheep (which had "before this been constantly kept so regulated in their feeding that he was "enabled to send mutton to market at stated intervals) suddenly sickening "and dying. Although they had somewhat recovered at the time, the end of "February, so that there were no more deaths among them, they seemed "absolutely unable to recover flesh.

"Mr. Guy of St. Mary's told me that, during the violence of the cholera in "his parish, the goats died off from a diarrhœa exceedingly similar to the "human disease.

"Cases were known in Spanish Town where dogs and pigs exhibited all the "symptoms of the epidemic. In these instances, the animals had been observed "feeding on the human rejectamenta."

General Conclusions, &c.

That the season of 1850 in Jamaica was remarkable for the prevalence of meteorological phenomena, indicating some great distemperature of the atmosphere, and that the cholera appeared at that very time of the year which is usually the most sickly.

That it had existed as an epidemic for a considerable time previously, and was then existing, in different countries within the circuit of the Mexican Gulf and Caribbean Sea, including New Orleans, Vera Cruz, Chagres, Carthagena, Cuba, &c.; and that sporadic cases had occurred in Barbadoes prior to the first in Jamaica. It would be highly instructive if we possessed the means of ascertaining, with exactitude, the dates at which a disease like cholera appeared at different localities over a wide geographical region. Hitherto, little has been done to obtain such chronological information respecting the career of epidemics; but the subject is one of great interest. Possibly, the discovery of some important general fact or law might result from a sufficiently extensive inquiry of this sort; and what Colonel Sir W. Reid has done for the history of Storms, might be achieved for that of migratory pestilences.

That the appearance of the pestilence in Jamaica could certainly not be traced to importation by shipping; that its subsequent spread as an epidemic over the island was independent of personal communication or intercourse; and that all attempts to restrain its diffusion by cordons were nugatory.

That the earliest cases in every parish of the island occurred in low hovels, situated in unwholesome localities; in very many instances close to the beach.

That the results of observation, in every part of the island, showed unfailingly the influence of local agencies on the development and type of the disease. The mortality among the well-conditioned class was very limited; it might be counted by *units;* whereas that among the mass of the people was by *thousands.* So striking was the comparative exemption of the white residents (the great majority of whom live in clean airy dwellings) while death was raging around them, that the negroes at first imagined that they themselves had been poisoned by them. The proportion, too, of recoveries from the immediate attack was also much larger among the better class; it was under the secondary fever that they generally sank.

That the atmospheric contamination from filth within and around dwellings, and from the huddling together of the people at night, was the main exciting and intensifying cause of the attacks of the disease; and that humidity and miasmatic malaria gave much additional force to the morbific agency.

That the disease was invariably more virulent in low-lying situations, especially near the sea-coast, than in the more elevated; but that the natural advantages of elevation were often entirely neutralized by the operation of local and domiciliary unwholesomeness. The mortality was always greater in the ground, than in the upper, floors of buildings. Very few attacks occurred on board vessels in any of the ports of the island. It is to be observed that the ports in Jamaica are almost all open sea roadsteads, and not situated at the embouchure of rivers.

That whatever tends to lower the vital energies,—as great fatigue, long fasting, previous illness, intemperance or other sensual excess, fear, &c.,—or to disturb the healthy functions of the surface,—as getting wet, exposure to chill night air, &c.—strongly predispose the system to attacks of cholera. Most of the deaths among medical men were attributable to excessive exhaustion.* Want of proper food and clothing told terribly upon the masses; while early drills on empty stomachs, mounting guard at all hours without proper precautions, open canteens, &c., aggravated not a little the risk of the troops. The depressing belief that the disease was highly contagious greatly increased the liability to seizure, while it led to the abandonment of the sick, and other lamentable consequences.

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* "The mortality among the higher grades of society from the time of the appearance of the epidemic is limited, and is chiefly made up of medical practitioners. If we compare the deaths of this class with those of the whole body of Europeans in the island, we shall not only arrive at a just appreciation of the influence of excessive fatigue in selecting victims for the cholera, but we shall also be enabled to give a painful illustration of the devotedness of those individuals who were foremost in serving the public weal at the imminent risk of life."—*Falmouth Post.*

That the circumstances attending its unexpected outbreak among the troops at Up Park Camp in June, and at Newcastle barracks in August, seem to indicate that new comers are more liable to be attacked with cholera than those who have passed through a previous epidemic season, even though they may not actually have had the disease. This point deserves the especial attention of military officers.

That, in an immense majority of cases, the attack of malignant symptoms occurred at night or very early in the morning; but that there is reason to believe that there had been very generally some intestinal disturbance, either diarrhœal or colicky, previously. In many instances, however, the invasion appears to have been almost instantaneous and without premonition. This was the case more particularly in very malarial districts, where the disease often assumed the *foudroyant* form, in which the discharges are by no means among the most conspicuous symptoms.

That, in a country like Jamaica in its present condition, it is in vain attempting to arrest the ravages of the cholera when it breaks forth with epidemic violence, as long as the people are allowed to remain in their pestiferous abodes. No amount of medical aid alone will then suffice; you might as well endeavour to extinguish a conflagration with mere pailfuls of water. The only means of preventing a large sacrifice of life is by removing the inhabitants promptly, and locating them for the time in a more wholesome situation.* Wherever a judicious removal was effected, the results were most satisfactory. Could five thousand of the worst hovelled inhabitants of Kingston have been at an early period camped or hutted on the race-course at the upper part of the town, or even on the parade, I am persuaded that not a tenth part of the mortality among them would have ensued. The same may be said of Pagee Point, in reference to Port Maria. There might be difficulties in the way; but these are far from being insuperable, or even very great, if due power was given to carry out the necessary measures. Communities have to submit to martial law when the security of the country requires it, and they willingly submit to it in the face of a formidable enemy. It is impossible to exaggerate the importance of having places and houses of refuge, in all times of pestilence. Every town should have an open, well cleared and well drained plot of ground, where tents or sheds might be erected. In cases of emergency it may be necessary to appropriate school-rooms, theatres, and even churches, as places of shelter, especially if the weather be wet at the time.

That in all public institutions where numbers are congregated together, as in barracks, hospitals, asylums, &c., the first step to be taken on the advent, or rather on the approach, of a pestilence should be to thin and disperse more widely the inmates. This precaution should never be neglected. The ordinary amount of breathing-space (even when this is ample, which it rarely is in such establishments) is then insufficient. In many situations, fires or stoves might be advantageously employed in buildings to counteract the stagnancy as well as the dampness of the air. The burning or exploding of combustibles in the open air serves but to excite alarm.

That the experience of the cholera in Jamaica furnished abundant evidence as to not only the inutility, but the evil, of "cholera hospitals." Mischief was almost invariably done by moving the patient to any distance when incipient, far less confirmed, collapse had set in. It is nevertheless of the utmost consequence, for the successful treatment of this stage of the disease, that the sufferer be withdrawn (when it can be done without adding to the exhaustion) from the poisoned air of a foul close hovel into a purer atmosphere. You would extricate a man asphyxiated in a sewer, before applying the means for his restoration.

That it is of the utmost consequence to adopt measures for checking the slightest intestinal disturbance, and other premonitory symptoms; nor can this ever be effectually done without a systematic visitation or inspection of the people, on estates as well as in the towns and villages, at stated intervals of time, and by the exhibition on the spot of suitable remedies in the manageable

* The average duration of an epidemic outburst in most localities may be stated as from three to six weeks. The stress of the invasion did not exceed this period, although the disease might linger for a time, or even recur.

stage of the disease. This, however, is often nearly impracticable in those parts where a thin population is scattered over an extensive, and it may be also an impassable, country. The establishment of depôts of suitable medicines is then all which can be done.

That, as respects the medicinal or curative treatment of the disease, great evil invariably followed in Jamaica from the free use of opium and alcoholic stimulants in the stage of, even incipient, collapse. The quantity of brandy used, or at least charged for, in some places was enormous. On the whole, the most satisfactory results were obtained from the administration, frequently repeated, of calomel and of saline medicines. Whenever ice could be had, it was found to be by far the best means of allaying the distressing thirst.

In the Appendix will be found extracts from the two notifications drawn up by the Central Board of Health, during my residence in Jamaica; and as I entirely concur in the views therein expressed, it is unnecessary for me further to enlarge on this branch of the subject.

GENERAL STATEMENT OF MY PROCEEDINGS.

Impediments in the way of Sanitary Legislation.—The Establishment of the Central Board of Health, &c.

It was on the 28th of January that I arrived at Kingston.* During the following two months I was engaged in making the circuit of the island, visiting almost every locality where the epidemic had been, or still existed. While engaged in this work, I suggested, through his Excellency the Governor, that a committee of the House of Assembly be appointed for the purpose of taking the evidence of medical men, from different parts of the island, as to the sanitary measures which they might deem most necessary for the public health; in order that such evidence might be compared with the recommendations which I should be prepared to make upon my return to Spanish Town, and that thus no time might be lost in preparing a Bill for the consideration of the Legislature which was then sitting. Upon my return, I found that nothing had been done by the House; and there was much unnecessary delay before arrangements were made for me to give evidence before the committee, and to point out to them the measures which were required.

I had in the meantime addressed a report on the subject to the Governor (Appendix A.), wherein I had sketched the leading features of my scheme.

The chairman of the committee informed me that they had directed the Crown solicitor to prepare the draft of a sanitary Bill to be submitted to the House, and requested my advice respecting its provisions. This was at the beginning of April. I devoted much time and attention to the work, in the hope of rendering the measure as comprehensive and effective as possible. The Bill was at length introduced by Mr. Porteous, member for St. David's. The House very generally acknowledged the urgent necessity for such a measure. Ten days later, when it was again brought forward, opposition was made to its further consideration, in consequence of the alleged want of proper leisure from the lateness of the session, and also the expense which might be entailed upon the public by the adoption of some of its provisions. A very large portion of the session was meanwhile occupied with a new Police Bill, the discussions upon which had engaged both Houses of the Legislature for many weeks, and which, although then enacted, has (I believe) been subsequently repealed.

Apprehending that the session would close without so much as a single step having been taken by the Legislature for the protection of the public health, notwithstanding such an overwhelming calamity as had befallen the island, and although the pestilence was still in the midst of it,—not to mention the known fact that some of the other West India islands had recently enacted sanitary laws, as a precautionary defence of their people,—I urged the immediate adoption of a short Act for the purpose of instituting and establishing a competent board, which might at all events, among other acts during the recess, be engaged in devising and preparing measures for the consideration of the Legislature upon their re-assemblage. Accordingly, the Bill to establish a Central Board of Health for a limited period and for other purposes (14 Vict. c. 60.) was introduced, and carried through only two or three days before the Legislature was prorogued.

The Central Board having requested my co-operation and advice, I sketched out for their consideration the various subjects demanding inquiry, attended all the meetings, and gave every assistance in my power during my subsequent residence in the island.

The results of the labours of the Central Board are contained in their elaborate and very valuable report, which was presented to the Legislature in December last, and which has been since printed.

I cannot but here express my regret that the recommendations of the Central Board, upon several occasions, have not met with more ready concurrence from

* Assistant Surgeons Browne, Murphy, Campbell, and Crawford, R.N., who were sent out by the Admiralty, arrived by the same opportunity. They afforded the most valuable assistance in different districts of the island where the pestilence had broken out. Dr. Parkin, actuated only by pure benevolence and professional zeal, had gone out in the month preceding. This gentleman, already distinguished for several ingenious works on epidemic diseases, has published an account of his observations on the cholera in Jamaica.

the Privy Council, whose sanction is required by the Act to give due effect to them; and, also, that their report has not been made the basis of more thorough and effective enactments for bettering the sanitary condition of the island, and for providing medical relief to its people, by the House of Assembly.

The "Central Board of Health Act" was renewed at the beginning of the present year. It is obviously a crude and very imperfect measure. As I shall in the sequel explain, at some length, my views respecting the measures required for the welfare of Jamaica, it is unnecessary to say more at present.

A copy of the Act will be found in the Appendix.

The Quarantine Laws and Practice of the Island.—Revision necessary; Alterations required.

This subject is one of much importance to the welfare of the community as regards the public health, inasmuch as it has been generally believed hitherto that the quarantine established at the different outports has contributed, in no small degree, to protect the island from the introduction of epidemic and contagious diseases, and especially from that one of which all classes have had the greatest dread, smallpox. It will be seen presently how far facts justify this belief.

The local Act, under which the powers are exercised, is 4 Vict. c. 32, and was passed in 1840. These powers are vested entirely in the Governor and Council, who are authorized to issue any order or orders respecting "all ves- "sels coming from or having touched at any place from whence they shall "have adjudged and declared it probable that any infectious disease, or dis- "temper highly dangerous to the health of Her Majesty's subjects, may be "brought." Under certain circumstances, as of a vessel arriving with disease on board, although she may not have come from a port which has been declared infected, or of a infectious disease breaking out in the island, the Governor, of his sole authority, may make such orders as he may deem expedient to prevent its spreading. He has also the power of shortening the duration of quarantine to be performed by particular vessels, or of releasing them altogether from it, as he shall see fit.

The health officer, or in his absence an officer of the customs, is required to go off to the vessel (before she has come to anchor), and ascertain the health of the crew and passengers, before she is permitted to have communication with the shore. If subjected to quarantine, she may be ordered off to another port, to remain there until it is performed. All persons undergoing quarantine are subject to the directions of the health officer, or of his substitute. Heavy penalties are assigned for disobedience on the part either of those in detention seeking to leave their ship, or of those on shore having communication with the vessel in quarantine. Every vessel, droghers or coasting vessels excepted, before being permitted to enter and clear at any port, is required to pay a fee, "in aid of "the charges and expenses to be incurred under and by virtue of the pro- "visions of this Act." There are sixteen different ports to which health officers, appointed by the Governor, are assigned. Their salaries vary from 500*l.* at Port Royal, to 20*l.* per annum at several of the smaller parts. In all, they amount to 1,120*l.*

From the evidence taken before and collected by the Central Board of Health, it appears that the utmost irregularity prevails in the entire machinery of quarantine throughout the island. Hitherto, there has been no code of instructions to regulate the conduct of the health officers, either as to the diseases for which quarantine was to be imposed, or as to the period of detention to be required. Hence there has been no uniformity of procedure in the different ports; everything has been left to hazard and caprice; what is done in one place is not in another, and vice versâ. Nor can we be surprised at this when it is known that, hitherto, there has been no responsible board or authority of supervision and control, to which communications might be addressed, or from which directions might proceed. It has, indeed, been the practice for the Governor to nominate most of the medical men in Kingston as a Board of Health, for determining the duration of quarantine in particular instances, and as a means of holding communication with the health officers; but the board, not being vested with any powers, has had no action of its own, nor has their advice been always followed by the executive. Their intervention,

therefore, has only served to shift the responsibility from where the law has most injudiciously placed it. For example, in the late disastrous visitation of cholera, the Governor in Council deemed it expedient to issue a proclamation, after the pestilence had fairly broken out in Port Royal and Kingston, imposing a quarantine of five days on vessels arriving at any of the outports from these places, without having even consulted with the Board in Kingston, and indeed contrary to the known opinions of all the medical men there. Moreover, no record has been kept of the proceedings of this unpaid Board; nor have even the health officers been required to keep any registry of their acts. It is impossible, therefore, to ascertain with any accuracy the results of past experience, upon almost any of the points involved in this inquiry.

The following particulars, derived chiefly from the evidence of Dr. Chamberlaine, who has been health officer of Kingston for the last 25 years, and of the other health officers in the different ports, will best serve to show the practice which has been usually followed in matters of quarantine, as well as to make known some interesting facts respecting the health of the island during that time.

The diseases against which it has been usually enforced are Smallpox, Measles, Scarlatina, and Cholera. In the case of the first of these diseases, a period of detention of from 19 to 21 days,—during which the vessel is kept at the quarantine station, which is generally several miles from the port, and all the crew and passengers are detained on board,—from the date of the last death or of the convalescence of the last case, is enforced. Nearly the same period is required for measles. As to scarlatina, no instance of a vessel arriving, at Port Royal, with the disease on board had occurred during Dr. Chamberlaine's service. With respect to the cholera, most rigorous restrictions were resorted to in 1832, when an invasion of the pestilence was apprehended; and again, in 1849 and in 1850, quarantine was imposed on arrivals from Carthagena and other ports in the Gulf of Mexico, where the pestilence had made its appearance, while (strange to say) other places, such as Cuba, where it also existed, continued in free communication with Port Royal.

Quarantine against Yellow Fever is regarded by all the medical men as wholly preposterous, as far as their own island is concerned. No season passes over without some cases of its spontaneous development. There has been no epidemic prevalence of it for ten or eleven years past.

As smallpox is the disease against which, more than any other, quarantine has been kept up in Jamaica, it is of consequence to determine with exactitude the circumstances of its appearance in the island on two occasions, as a severe epidemic during the last 22 years, notwithstanding all the precautions which have been taken. The first of these outbreaks was in 1831. It spread over nearly the whole island, and occasioned a large amount of suffering and death. Fortunately, an account of it was published by Dr. Paul in the Jamaica Physical Journal, so that we have the benefit of the writer's testimony, as well as of that of Dr. Chamberlaine who was health officer at the time, and of Dr. Magrath, one of the most eminent practitioners then, as now, in Kingston. All these gentlemen agree that the disease could not be *traced* to importation. Dr. Paul, indeed, insinuates that it might have been brought from Nassau in New Providence, where it had been prevalent some time before. But he was unable to adduce any thing like specific evidence; and Dr. Chamberlaine distinctly states that he took all possible pains to discover the origin of the disease, but that his inquiries proved quite fruitless. The first case occurred in a child in Water Lane, Kingston. Within a few days, other children were affected, and "a little time only elapsed, ere cases were observed in all parts of the town." The disease had not been seen in Kingston for the preceding 15 or 20 years.

After the epidemic of 1831, no cases of smallpox were heard of until 1840, when several took place in Kingston; but the disease did not spread. No satisfactory explanation could be given as to their origin. They occurred among the inhabitants of the city. It is to be borne in mind that a strict quarantine was imposed on vessels arriving with the disease, or in which cases were known to have occurred during the voyage; but to show how impracticable it is to attempt to carry out a system like that of quarantine as usually practised, the following facts (which were not known to the health officer until I stated them to him) may be mentioned. During the voyage of the mail steamer "Medway" to Jamaica in November 1849, a case of smallpox occurred among the crew. On

arriving at Barbadoes, she was put and kept in quarantine during the three days she remained there, and the man, who at the time was quite convalescent, was transferred to a schooner, for the purpose of completing his quarantine before landing. The "Medway" proceeded to St. Thomas (a Danish island), where she was at once admitted to pratique, and, having obtained a clean bill of health, went on to Kingston. A similar occurrence took place on board the "Severn," in which I went out in January 1851. One of the crew sickened with smallpox during the voyage. He was convalescent when we arrived at St. Thomas, where pratique was accordingly given. In consequence of this, no quarantine was required at Kingston, which we reached a few days afterwards. Had these two vessels gone direct to Jamaica, a detention of several days would have been imposed upon them, before any communication with the shore would have been permitted; as was indeed the case, a few years ago, with the bishop who was confined for a week or two in the Apostles Battery, where his family and friends were freely allowed to visit him, provided they did not shake hands! By having previously touched at a foreign port,—where, it deserves to be mentioned, more enlightened views seem always to have prevailed,—this most unnecessary infliction was avoided.* To render, if possible, the absurdity the greater in the case of the "Medway" it appears that the sentry box in which the patient had been kept apart during his sickness, being thrown overboard at Barbadoes, was immediately taken possession of by some boatmen, and hauled to shore. Thus it is that all attempts at mere mechanical exclusion of disease must inevitably fail, in consequence of the simple impracticability of carrying them out completely.

But the cases now referred to may be considered as affording only negative evidence, and merely serving to show that the evasion of quarantine restrictions may frequently occur with impunity. This remark, however, will not apply to the case of the "Brandon" emigrant ship, with whose arrival at Kingston in April 1851 the epidemic smallpox, which has now for many months prevailed over most of the island, may reasonably appear to be connected. Fortunately, all the circumstances of this case are accurately known, and admit of no dispute. I quote from the notes, which I took down upon the spot. The "Brandon" sailed from Sierra Leone on the 14th April with 249 African emigrant free labourers, varying in age from 12 to 40 years, and 32 of a crew on board. She arrived at Port Royal on the 13th of May, having had no communication with any place or vessel during the voyage. Some of the Africans had recently been taken from a Congo slaver, in which, as is very common, a good deal of smallpox had existed. There was no appearance of sickness among any of them, on being received on board the "Brandon." On the 17th, three days after leaving Sierra Leone, a case of smallpox occurred; another on the 23d, and a third on the 27th. The first and third cases were confluent, and proved fatal; one on the 27th of April, and the other on the 7th of May. Both patients were unvaccinated. The second case was comparatively mild, and the boy perfectly recovered in nine or ten days. He had been vaccinated. All three patients were about fourteen years of age. They were kept apart from the other passengers, and communication was prevented with them as far as this was practicable on board a crowded ship; the solution of chloride of zinc was also freely used. Mr. Evans, the surgeon, had of course constant intercourse with them. No other case of small-pox occurred, although many of the Africans bore no mark of having had either it or cowpox. Three other deaths had taken place during the voyage; two from chronic diarrhœa, and one from bilious remittent fever. On arriving at Port Royal there was no sickness on board, with the exception of a few instances of slight diarrhœa and ophthalmia. The vessel was immediately detained in strict quarantine, and no communication whatever permitted with the shore; not even letters were landed; nor were any fresh provisions sent on board for several days, although Mr. Evans was of opinion that the diarrhœa was mainly attributable to the long use of salted food. During this time, the vessel was anchored at a distance of four or five miles from Kingston. After much delay, the emigrants were landed upon

* It would appear that the practice of quarantine has always been more consistent with good sense and right feeling in the island of St. Thomas than in our own colonies. The disgraceful case of H.M.S. "Eurydalus," related in the Second Report of the General Board of Health on Quarantine, p. 201, is an instance of this. Nor has St. Thomas suffered for her generosity; it has been, on the whole, more healthy than most of the British and other West India islands.

Fort Augusta, and remained there until the quarantine imposed had expired. This was on the 25th, a period of eighteen days since the date of the last fatal case having been considered necessary. Fresh provisions had been sent only two or three times, during the detention. The vessel did not leave Port Royal till the 31st, when she proceeded to Falmouth, on the north side of the island, where she was to land the Africans. They were then distributed over different properties in Trelawny, and continued healthy until the beginning of July, when some cases of smallpox began to appear among them in one district. The evidence of Dr. Dalrymple, the resident medical practitioner, is clear upon this point. The disease soon spread to the creole population, and gradually diffused itself from parish to parish.*

Here, then, is an instance of the outbreak of smallpox, not only where a lengthened quarantine had been adopted, but where upwards of a month elapsed between the expiry of the detention and the manifestation of the distemper. Nor is it undeserving of notice that it had been existing, for many months, in several of the other West India islands, as Barbados, St. Lucia, Montserrat, St. Kitts, and Grenada, during the first half of 1851; and that, in some of them, there was a good deal of *varioloid* as well of *variolous* disease. Since its appearance in Jamaica it has broken out at the Havannah, notwithstanding a most rigid quarantine. *Chickenpox* was prevalent, as has been already stated, in many parts of Jamaica, just previous to the arrival of the "Brandon."

It has frequently been conjectured that *fomites* might retain the poison of smallpox for a great length of time, and then give it off when they are exposed to the air. Upon this idea is founded the practice of fumigating, and immersing such substances in boiling water,—a simple and useful precaution upon all occasions. In the present instance, however, there were no fomites, except the bodies of the Africans themselves can be regarded as such. They had of course no raiment, except the partial clothing on them.

In the case of the "Glen Huntley," another ship with emigrant Africans on board, which arrived six years ago at Lucea, the smallpox prevailed to a considerable extent. Several deaths had already taken place. The people were all immediately landed, and marched to a depôt a few miles from the town, and kept there until the disease ceased. It did not spread to any of the inhabitants, although the health officer was in daily intercommunication.

With regard to the other exanthematous diseases for which quarantine has hitherto been required, viz., measles and scarlatina, the evidence of Dr. Chamberlaine and other resident medical gentlemen leaves not a shadow of doubt as to the utter futility of the practice. It is admitted by all that the first of these maladies is of frequent occurrence in the island, quite independently of introduction from without; and not a single instance has been adduced, to warrant a suspicion that it has ever been traced to the arrival of any vessel with it on board. The extensive epidemic in 1821 could not be accounted for. For some months past, during the present year 1852, there has been a great deal of measles in different parts of the island; but no one has attributed its development to importation. Yet, quarantine is still enforced. Very recently, Her Majesty's ship "Alban" was detained in strict quarantine at Port Royal for upwards of a fortnight, in consequence of two children (who with their parents had come from Carthagena) having had a mild attack of measles during the voyage. They were convalescent on arrival, and there was no symptom of sickness in any other person on board. Commodore Bennett and Commander Crawford remonstrated strongly against the vexatious detention, but to no effect. The letter of the latter had been fumigated and slashed, before it was received on shore! At length, the Commodore having written to the Governor that it was urgently necessary that the "Alban" should make preparations for again proceeding to sea, she was released.

As to scarlatina, neither Dr. Chamberlaine nor any of the other health officers in the island are aware of an instance of a vessel, arriving with the disease on board. Should, however, such a case occur, a lengthened quarantine would inevitably be imposed; although it is universally acknowledged that the severe

* On several occasions and in different countries, smallpox, as well as influenza, has either preceded, or followed in the wake of, epidemic cholera. There is probably more of concatenation in the development of epidemics than has generally been imagined. Accurate registers of facts over a succession of many years, and in various regions, are much wanted.

epidemic of the disease, in 1841, could not be traced to importation*; and moreover, that occasional sporadic cases are every now and then to be met with in the island, which appear to have developed themselves spontaneously, or whose development could, at all events, not be traced. Dr. Bowerbank saw two well marked cases in Spanish Town in 1846; and Dr. Magrath, junior, has communicated to me the particulars of an isolated case which he attended in Kingston, in 1850. A solitary case occurred a few years ago at Newcastle barracks, in a soldier not long arrived from Europe. Drs. Dunn and Chamberlaine assured me that they have repeatedly seen sporadic instances of the disease, very generally among children, both in Spanish Town and in Kingston. A few intercurrent cases have occurred during the late epidemic of measles.

Epidemics of hooping-cough have been repeatedly experienced, without any suspicion of discoverable introduction.

With respect to the invasion of the cholera, it was of course a matter of deep importance to determine whether or not it was attributable to the arrival of any vessel or vessels, having the infection on board. On no occasion, have the circumstances been more favourable for an accurate solution of the point in question; and fortunately the opportunity was not lost. Port Royal being completely isolated, and having but a very limited population, every particular respecting the history of the first cases was ascertained at the moment by that highly intelligent officer Mr. Watson, surgeon of the Naval Hospital, residing on the spot. In the valuable paper which he has published in the Lancet of January 11th, 1851, he has declared the result of his observations as to the alleged contagious nature of the disease, viz. "that if it (contagion) acted at "all, it played only a secondary part, and that some totally different influence "mainly directed the march of the present fatal epidemic;" and in another document, which was published in the island newspapers at the time, he says, "I look upon the assertion that the disease was imported, as a mere assumption "unsupported by proof." In this opinion, Dr. Wingate Johnston, Deputy Inspector of Fleets and principal medical officer of the Naval Hospital, and Dr. Walshe of the Royal artillery and acting health officer at Port Royal, who were the only other two resident medical men, unhesitatingly coincide. The Local Board of Health in Kingston, consisting of all the medical practitioners there, adopted the same conclusion. And after a most minute and searching inquiry upon the spot into all the circumstances of the case, and a most careful examination of all the evidence connected with it, I feel myself quite warranted in saying that no unprejudiced person can have a doubt upon the subject, viz., that the occurrence of the earliest cases at Port Royal could not in any measure be traced to importation.

That the Executive should have thought of imposing quarantine upon arrivals from Kingston at the outports, when the inland intercommunication was uninterrupted, and after the disease had already manifested itself in different parts of the island, can only be accounted for by the bewilderment of the moment, and by the circumstance of the Privy Council having no responsible medical board to direct their decisions in such an emergency. The act was most unfortunate, inasmuch as it gave authority to the very erroneous views which had been propagated respecting the highly contagious nature of the disease, and tended too to increase the general panic, while it served to divert the attention of the community from the only trustworthy means of protection. It served, moreover, to warrant the adoption of harsh restrictive measures on the part of other colonies against arrivals from Jamaica, and thus very seriously to impede intercourse and transit. Several vessels, which touched at Kingston, refused to receive on board any passengers. No little confusion seems to have prevailed as to the orders which were issued. Thus the health officer at Kingston received authoritative instructions, on the 28th of October, to *board* all vessels which arrive, and to detain them in strict quarantine, "if there be anybody on board "who is ill of *malignant cholera*, or *of any other disease which either yourself* "*or other medical men regard as infectious or contagious*, or if any person

* The first cases of this epidemic occurred in Spanish Town, and about the middle of May; a long continuous drought of nearly 18 months had been followed by very heavy rains. It did not appear in Kingston till August. It continued to prevail in the island until the following spring; scarcely a district escaped. Jamaica had not suffered from epidemic scarlatina for the thirty years previously. The preceding year, 1840, and the spring of 1841, had been extremely sickly from the prevalence of fatal yellow fever.

" has died on the passage of any such disease, or if the clothes of any person " who has so died are on board, or if the vessel has arrived after a passage of " less than five days from any port where you ascertain that any such disease " prevailed at the time of departure." Strange to say, vessels of the Royal Navy were by the same letter exempted from these regulations, although at other times they were amenable to them. Moreover, it would seem that at the outports of the island less stringency was deemed necessary. A coasting vessel having arrived on the 14th November at Port Antonio, having a case of cholera on board, the health officer wrote to Spanish Town to ascertain how he was to act, as the disease had already manifested itself in the town and neighbourhood. He was informed by letter of the 21st, " that there was a " meeting of the Council this day, at which his communication was taken into " consideration, and that it did not appear to the Council to be a sufficient " reason for releasing a vessel from quarantine at Port Antonio that the cholera " is already established there, because the vessel might in that case go to some " other port not yet infected. The Governor trusts that the discretion, which " the existing order in council leaves to the health officer and the Local " Board of Health at each port, will be sufficient to prevent any serious incon- " venience." In a despatch of the 27th November from Earl Grey to the Governor, his Lordship expressed his regret at the steps which had been taken, remarking, with great truth, " that attempts to arrest the spread of cholera by " the prohibition of intercourse with infected places have always proved futile, " and are always likely to be so; while, at the same time, by checking trade " and industry, they necessarily create great distress among a population " exposed to such restrictions, thus aggravating the effect of some of the most " powerful predisposing causes of this fatal disease." Notwithstanding this expression of decided opinion, and the all but unanimous conviction of every medical man in the island as to the utter inutility of the practice, quarantine was actually imposed upon a vessel at Port Royal, at the beginning of the present year 1852, in consequence of a case of cholera having occurred on board. But not only were restrictions placed upon vessels at the outports, but attempts were made in some parts of the island, by the local authorities and with the sanction of the Executive, to establish cordons around certain districts, in the hope of keeping out the pestilence. Much inconvenience and not a little distress were thus occasioned; nor, in a single instance, did the attempt answer the purpose.

The evil effects of such measures are, unfortunately, not limited to the places where they are attempted to be carried out. The example is apt to be followed elsewhere, in utter ignorance of the real results which have been obtained. Such must have been the case at Demerara, when Her Majesty's steam ship "Inflexible" arrived there with troops from Jamaica, in February 1851. The history of this case appears to me to be so important, in many points of view, that I shall give the particulars at some length. They were obligingly furnished to me by Commander Dyke himself, when I visited him in Kingston Harbour, upon returning from Demerara in the month of April.

On the 13th February 1851, the "Inflexible," having embarked the head quarters of the 2d West India regiment, 320 in number, besides three horses, and with a crew of 140, sailed from Port Royal for Barbadoes with a clean bill of health. All on board were quite healthy, with the exception of some of the sailors, who had been left much debilitated by the effects of fever caught at Grey Town in the beginning of the year. She arrived at Bridge Town on the 21st, and was at once admitted to pratique, no sickness having occurred during the voyage. After receiving an officer and other thirty-six men of the same regiment, and being provided with a fresh clean bill of health, she started the same day for Demerara, which she reached on the 25th. The health officer there at once, and without ascertaining the condition either of the crew or troops, amounting in all to about 500 souls, acquainted Captain Dyke that the Board of Health had decided upon imposing a lengthened and stringent quarantine. No exact period was stated; it was only intimated that the Board would again meet in twelve days or a fortnight, to reconsider the case. The anchorage ground at Demerara, it is to be observed, is at the mouth of a swampy river; and the weather at the time was exceedingly wet, so that the troops were necessarily crowded together under very imperfect cover, almost all the while. The only communication permitted with the shore was to have a supply of water sent off.

This was done by a boat from the land with three negroes, who, although they had free intercourse with the "Inflexible" in assisting to get the water on board, were allowed to go on shore without impediment. On the 8th of March, Captain Dyke was informed that he must remain in quarantine until the period of *forty days* from the date of his leaving Jamaica was completed, and that he should then only be admitted to pratique, provided that all on board remained healthy. Captain Dyke, unwilling to run the risk of remaining any longer with a ship crowded to excess in so unwholesome a locality, deemed it better to return to Barbadoes, and complete the quarantine there. On this day, one of the soldiers died of acute disease of the heart and liver supervening upon an attack of rheumatism. "On the 7th," writes Assistant Surgeon Reid, "the "case seemed favourable, and would probably have ended so, *had it not been* "*for the crowded state of the vessel*, and the *unfavourableness of the climate.*" The ship remained at Barbadoes until the 22d of March, when she again sailed for Demerara, where she arrived on the 24th. Fortunately, all on board had continued well. Pratique was given on the following day. On the 5th of April, the Inflexible left Demerara for Jamaica, with the head quarters of the 3d West India regiment.

The correspondence which took place between Mr. Barkly the Governor of Demerara on the one hand, and Captain Dyke, and Colonel Cobbe commanding the troops on board on the other, brings out some facts which serve well to illustrate the working of quarantine, as carried on at the present time. On the 26th of February, the day after the first arrival of the "Inflexible," Mr. Barkly wrote thus to Colonel Cobbe: "The fears excited in the minds of the inhabi- "tants of this colony, by the devastations committed by the cholera in Jamaica, "are so extreme that I do not feel justified in setting at naught their expressed "wishes on the subject; though, considering the facts stated by Staff Surgeon "Dr. Richardson, I should myself have been inclined to relieve you from your "embarrassing position forthwith." Alluding to Captain Dyke's intention of returning to Barbadoes, Mr. Barkly remarks, "it strikes me that such a step "would only complicate the affair, as it was strongly urged by several members "of the Legislature that that island should be declared *suspected*, on account of "the existence of smallpox there." It appears that the reason for not declaring quarantine against Barbadoes for the smallpox, was that "*the commercial inter-course with that island is so important.*" Such is the way in which the practice is made to bend to interest and convenience.

It thus appears that Captain Dyke was placed in a regular dilemma. In a letter addressed by him on 5th March to the Governor, he alluded to "the enormous "expense entailed on Her Majesty's Government by the detention of Her Ma- "jesty's ship 'Inflexible' in this river with the troops on board, and to the very "great inconvenience and delay to Her Majesty's service consequent on so "lengthened a period of quarantine, when her services are so much required at "other places." He suggested the propriety of hiring a vessel to receive the troops on board, in order that he might receive the other troops for embarkation, and be enabled to return at once to Jamaica. This, as we have seen, he was not able to do for another month. It appears, from a subsequent letter, that the Demerara Board of Health had actually urged the Governor to order the "Inflexible" away from the place, and that this step might actually have been taken, had not the Attorney General been consulted as to its legality: "He found that forty "days was the longest period of time that can be imposed on any vessel, dating "from the time of her leaving an infected port." It will be remembered that Kingston had been declared free of cholera, for a month previous to the sailing of the "Inflexible." To render the folly of the case complete, it afterwards transpired that a serjeant, who had been detained at Port Royal when the ship sailed with the regiment, and had been forwarded by the mail steamer to Demerara a day or two subsequently, was permitted to land there without any obstruction, and was actually on shore during all the time that his comrades were so rigorously prevented from having the slightest communication with it.

Such is a specimen of the absurdities which are continually taking place, too often with no unwillingness on the part of the officials engaged, in carrying out quarantine regulations. But to return to Jamaica. It is a notorious fact that the manner, in which quarantine has been carried out at almost every port in the island where it is established, must render it, if the practice affords any protection to the public health, utterly illusory. The following

instances out of many may be quoted. In 1845, a vessel arrived at Port Maria from Liverpool. She had lost one youth during the voyage from *fever*, the captain said, and another boy had had chicken-pox or something like it. He was then quite well. Pratique was immediately given. In the course of a day or two afterwards, suspicions arose that smallpox had been on board, and that the death had been occasioned by it. From the appearance of the chicken-pox patient, who was now for the first time examined, there could be no doubt about the matter. It was too late, however, to think of imposing any restrictions on the vessel or her crew, and no further notice was therefore taken of the matter. This fact was mentioned to me by Dr. Macnab, who was then on the eve of leaving Port Maria. In another instance which occurred in 1849 at the same place, Dr. Cooke, the health officer, went on board daily a vessel, which was kept in lengthened quarantine in consequence of two cases of smallpox, to visit the patients, returning on shore of course immediately afterwards. The cargo, which was of salt fish, was seriously damaged by the detention.

In February 1849 a vessel from New York arrived at Port Royal, having a case of smallpox on board. The deputy health officer went on board, and saw the patient. He returned on shore himself, but put the vessel in quarantine; and the patient died on board without having received any medical assistance. The rest of the crew remained unaffected; nevertheless, they were not released for nearly three weeks after the date of the death. It is to be observed that the neglect of the poor sufferer was not chargeable upon the health officer; he was liable to be detained in quarantine himself, if he went on board.

In the case of another vessel from a port in the United States, in which a man had had smallpox during the voyage but was convalescent on arrival, a person from Kingston had gone on board the vessel and had returned on shore, before she was visited by the health officer. The vessel, with her crew, were detained in strict quarantine for three weeks, although they were quite well all the time; while no restraint was imposed upon the offender.

Not unfrequently, certificates of health have been granted in order to enter the vessel at the customs, although the health officer has never been alongside or on board of her. The mere word of the captain or agent on shore has been taken, and the paper signed. A case of this sort, which occurred at one of the ports on the north side of the island, was brought under my knowledge when I was in Kingston.

At other times (and indeed this substitution is permitted by the law), a custom-house officer has performed the duty of visiting a vessel, and granting pratique, in the absence of the health officer.

When, in addition to the irregularities and inconsistencies already mentioned, it is taken into account that there exist no means of ascertaining with accuracy the real state of health in many of the ports in the Mexican Gulf, there being no British consul or accredited officer to give information, not to allude to more distant regions from which vessels are every now and then arriving;—that in many instances the mere statement of the uneducated skipper of the vessel, whose object is of course to avoid quarantine, is the only information to be had on this subject, or on the health of the crew during the voyage;—that cases have actually been known where false rumours have been wilfully circulated, for the very purpose of causing inconvenience and expense, while, in other cases, wilful mis-statements have been made to escape detention;—that some ports have been declared infected or suspected in consequence of the merely rumoured existence of a disease, while others, where it was known to exist, have at the same time remained in free communication;—that vessels by having touched at an intermediate port have escaped quarantine, which would inevitably have been imposed if they had arrived direct;—that the very presence of a medical officer on board only serves to render the risk of detention the greater, by his diagnosis of diseases which would otherwise have not been detected;—that there have never been any means to prevent communication with the shore of vessels detained in quarantine, save the fear of penalties, which have rarely been known to be inflicted in well known instances of disobedience;—that there is not a single authenticated instance of epidemic disease, in any port of the island, having ever been traced to the neglect or violation of quarantine;—that minute inquiries were instituted respecting the severe epidemics of smallpox in 1831, of scarlatina in 1841, and of cholera in 1850, and altogether failed in tracing

these diseases to any vessel or vessels;—that there has been no greater immunity from disease since 1831–2 when vessels of war were first subjected to quarantine, than there was before, when they were exempt from it;—that yellow fever, against which, at one time about the beginning of the century, quarantine was deemed necessary, has of recent years been much less frequent in Jamaica than formerly, although quarantine has been quite discontinued;—that relaxations of quarantine have occasionally been made without any detriment to the public health;—that the Danish island of St. Thomas has continued quite as free (if not more so) from epidemic diseases as Jamaica, although the quarantine practised in the former is so trifling and is often merely nominal;—When, moreover, it is known that in some ports of Jamaica the health officer has been in the habit of attending the sick on board vessels in quarantine, even in cases of smallpox which has always been considered the distemper most to be guarded against; while on other occasions smallpox patients have been landed and treated on shore, and that on no occasion has that or any other disease spread; —that the most experienced health officers in the island are of opinion that the existing practice of quarantine affords little or no protection to the public health, while it proves highly inconvenient and vexatious to shipping, and has on more than one occasion been productive of most distressing consequences; —it is surely high time that the changes, which science and experience alike suggest, should be made. Whoever trusts to quarantine and such mechanical means for the exclusion of epidemic diseases, will inevitably be disappointed. The experience of every island in the West Indies, not to mention other countries, amply proves the truth of this. It is like trying to prevent discontent or disloyalty in a land by the machinery of passports.

As the Act at present in force gives ample discretionary powers to the Governor alone, or with the advice of the Privy Council, most of these changes might be effected without delay. What I should recommend are these:—

1. That every vessel should come to an anchor in the port where she arrives, and not be merely hove-to as at present, before the health officer proceeds to visit her. Of recent years, American steamers have frequently run up during the night to Kingston, without heaving-to off Port Royal for the health officer's visit.

2. That, the health officer be required to go on board, and not merely alongside, as is most generally the case, and that he should examine the crew and passengers, and inspect the state of the ship, before he grants pratique or otherwise.

3. That in the event of there being no actual or presumably incubant sickness on board, and of the vessel and cargo being in a wholesome condition, pratique shall be immediately given, from whatever port she may arrive.

4. That in the event of there being any actual or presumably incubant sickness on board, which the health officer may consider likely to spread, the said officer shall have full discretionary power to adopt such measures as he shall deem best fitted to arrest the spreading of the disease to others, whether on board the vessel or to those on shore. Such measures will of course be exactly similar to what he would have recourse to, when the disease occurs primarily on the land, viz. the speedy removal of all from the ship to an airy and wholesome locality, the separation of the healthy from the sick, rigorous enforcement of cleanliness, &c. The liberal use of the solution of chloride of zinc and other similar preparations around the sick, and for the purification of the vessel, should not be omitted. It is unnecessary to say that the absurd practice of fumigating, or sprinkling with vinegar, letters, boxes, and dry goods should be given up; it is a mere farce; and moreover, as is perfectly well known, it is really not done. All necessary expenses incident in the carrying out of the necessary arrangements to be defrayed by the owners or consignees of the vessel, if the sickness be among the crew, and by the passengers themselves, if they are the parties affected.

5. That, in the event of a vessel being found by the health officer in a foul unwholesome condition, he shall be empowered to order her removal to a spot to be previously determined upon, there to undergo such cleansing and purification as he shall deem necessary; such operation to be conducted under his superintendence and direction, and all necessary expenses to be defrayed by the owners or consignees of the vessel.

6. That each health officer be required to register in a book to be kept for this purpose every vessel which he has inspected, with a statement as to her condition, the health of those on board during the voyage and on arrival, and the measures which he has deemed expedient and necessary to be taken, whether of immediate release and admission to pratique, or of the enforcement of sanitary precautions. These books to be annually transmitted to the secretary of the Central Board of Health of the island, under whose control and general direction all matters of quarantine should be placed, and which should be required to make an annual report upon the subject to both branches of the local Legislature. It is scarcely necessary to say that no bill of health, &c. should ever be granted except by a medical officer. To recognise the competency of a custom-house officer, or such like person to perform the duty, is virtually to declare the practice of quarantine in any form to be nugatory.

It appears to me that vessels of war and transports arriving at Port Royal, the only naval station in the island, might, with perfect safety to the public health, be exempt from the visit of the health officer of Kingston; and that, considering the ample facilities afforded by the dockyard and Naval Hospital for the immediate adoption of precautionary measures in the event of sickness among either the crews of the vessels or of the troops on board, they should be no longer subjected to the operation of the quarantine law, except only in being required to transmit to the Secretary of the Central Board of Health or to the health officer, as will be found to be most convenient, within twenty-four hours after arrival, a statement as to the health of the crew and others on board.

Hitherto the administration (which must always be discretionary to a certain extent) of the quarantine laws and practice of the island has been devolved on the Governor in Council, or on the Governor alone, without the aid of a responsible and publicly recognised health board of medical police. From the want of such a board, the Privy Council have been called upon to determine questions, on which it is obvious they are quite incompetent to judge by themselves.

The facts recorded above, respecting H. M. S. "Inflexible," will suffice, I trust, to show the necessity of a general supervision and control being exercised by the Government at home over the quarantine laws and usages in the colonies; for surely there should be something like uniformity and consistency among them, and each colony not be left to its own random and arbitrary will upon matters, upon which there should be one general code of procedure. If quarantine against certain diseases be necessary or advisable in one colony, it appears but reasonable that it should be enforced upon a similar plan in an adjoining one, and *vice versâ*. But at present no such agreement exists; and thus it has been seen that one of Her Majesty's ships of war, which was at once permitted at Barbadoes to communicate with the shore, was only a few days afterwards, although all the while in perfect health, most preposterously put into a lengthened quarantine at Demerara, to the very serious risk of human life and the great inconvenience of the public service. Had the Board of Health there felt that their proceedings were liable to the censure of the Government at home, I do not believe that they would have been guilty of such mischievous folly. Little less absurd has been the practice on some occasions in Jamaica; as in the case of the "Alban" steamer, in consequence of two convalescent cases of mild measles on board.

Waste of Life at all times from preventible Diseases.—No efficient Registration of Births and Deaths.—Amount of Pauperism.

That there is at all times a large amount of disease among the labouring population in Jamaica, and that the general ratio of mortality is always very much above what, with proper precautions, it might become, is pretty certain from a variety of circumstances, although unfortunately there are no means by which exact information on these important subjects can be ascertained. The general impression among the best informed is that, for many years past, the population of the island has not been on the increase, if it has not actually been diminishing; and numerous inquiries which I made led me to the same conclusion. If such be the case, it is obvious that either an unusually small number of births take place, or that there is an excessive mortality. There is every reason to believe that the latter is the fact. Although the practice of concubinage which has unhappily of late years universally prevailed among the negroes, to the gene-

ral neglect and abandonment of marriage, is always unfavourable to the increase of the species, it will be generally found upon inquiry that many of the women are anything but unprolific. They have a number of children, but few of them are alive after a year or two. There is, certainly, great mortality in early infancy. Dr. Maxwell, some years ago, estimated from the results of an extensive course of observations, for a series of years during slavery, that no less than a fourth part of the negro children born perished from one disease alone, *tetanus nascentium*. In some districts the loss was considerably higher; and such were thought to be the chances against the infant surviving, that the practice was to defer the christening for an extra week or two after birth, in order to save the payment of the clergyman's baptismal fee. In the report of a committee of the House of Assembly in 1846, on the condition of the rural classes as affected by the want of proper medical assistance, it is stated:—"in consequence of this want, numbers of "deaths have taken place, and are *daily occurring*, under circumstances too dis- "tressing to be contemplated without feelings of deep regret. These fatal cases "occur at all periods of life, from the oldest to the infant; but your committee "believe that, owing to maltreatment and the peculiar diseases to which the "latter very tender age is subject, and the want of obstetrical and medical "assistance, an extent of mortality takes place in the earliest stages of life "far exceeding the proportion in other countries; and, from the evidence which "has come before the committee, they believe that it is not hazarding a hasty "opinion in affirming that *one fourth of the black infant population of this island* "*die from the first to the eighth day after birth.*" In this report the committee express their opinion that, in consequence of the gradually increasing mortality, "the population of the island *is actually on the decline.*"* Dr. Hancock says that, in some of the West India possessions, fully one half of the children die from this disease soon after birth. It does not belong to the present memoir to discuss, with medical minuteness, the causes of this fatal affection. Suffice it to say that, by the adoption of very simple means, it may generally be prevented. The great difficulty in the present day is to induce the parent to pay the proper attention to her offspring; and such will always be the case when illicit intercourse is so prevalent among a population, as it has been of recent years in Jamaica. The disclosures of disgraceful neglect, which are continually being made at coroners' inquests in Kingston, attest the painful fact of the frequent sacrifice of infant life there; and there is every reason to believe that the same holds true in other towns in the island. Moreover, from the utter want of educated medical men in almost all the rural districts, the people are left without any means of obtaining assistance, even if they were willing to apply for it; while, at the same time, there is an increasing disposition to have recourse to ignorant black "doctors," many of whom, from having acted as dispensers in the preparation of medicines in slavery time, have acquired just so much of their names as to impose on the credulity of the people. Their usual remedies are drastic purgatives; but they do not confine themselves to these. At an inquest held in Kingston when I was there, it came out in evidence that one of these men had administered a grain and a half of opium and double that quantity of calomel, within less than an hour, to a child under one year of age. Such instances are of frequent occurrence. The evil is not confined to one period of life, although infinitely greater in infancy, but it extends to all. Not a few women die in or after childbirth, from ignorance and neglect. Diseases too, sufficiently manageable by proper treatment in their early stage, are perpetually being allowed to continue unrelieved, and even severe accidents unattended to, save by the mischievous impostors alluded to, until they have become inveterate or alarming symptoms have set in; and, even then, it would often seem that the impelling motive for applying for medical assistance is

* The following Extract from a letter of Mr. Turnbull, for several years British consul at the Havannah, to Lord Palmerston in 1840, shows the rapid increase of the negro race in other countries:—"It is a well-known fact that, in the breeding districts of Maryland and Virginia, the negro population is found to increase in a duplicate ratio as compared with the inhabitants of those regions of European descent. The planters of Cuba are aware that *the negro population of Virginia has long been doubling itself every twelve years and a half*, while the white inhabitants require twenty five years to accomplish the process of duplication. There is nothing in the climate of Cuba to prevent a similar rate of increase of the negroes. There is nothing, in short, but the cheapness of labour arising from the toleration of the African trade, which prevents the proprietors of old plantations in Cuba throwing themselves with confidence on the principle of propagation."

rather the wish to avoid the possibility of a coroner's inquest being held, than any anxiety to save the life of a relative.

Whatever may be the truth, there is no room for doubt that there is not a district in the island in which very numerous deaths are not continually taking place, which, in all human probability, might have been prevented by timely assistance. Hitherto, from the want of any proper standard of mortality, very erroneous views as to the healthiness of a district, as deducible from its death rate, have generally been entertained. The comparison is usually made with one notoriously unhealthy. If the ratio has not been thought to exceed 4 or 5 per cent. in the course of the year, the place has often been declared healthy. I have more than once heard Lucea called a healthy town, and the authority of military returns appealed to in confirmation of the statement. The mistake must have arisen from confounding the town, which cannot but be a most sickly locality, with the barracks which are situated on a detached promontory at some distance. A similar mistake may be made respecting the town and the barracks at Port Antonio.

There are, at the present time, no means of ascertaining correctly the death rate in any part of the island. A pretty accurate register of the burials in the burying grounds of the Church of England has been kept in most of the parishes. With this exception, all is confusion and mere conjecture. From numerous inquiries I found that no trustworthy records have been kept by any of the other religious communities, to which, it is to be observed, the majority of the blacks belong; and even if there had been, the evidence would still be very imperfect, in consequence of the numerous interments which are everywhere occurring among the negro population in the grounds immediately around their huts, and without the celebration of any religious rite whatever. This degrading practice appears indeed to be the rule in many districts. At the close of last century, Dr. Lempriere, who evidently took great pains to obtain as accurate information as possible, estimated the proportion of deaths annually in Kingston to its whole population (including, I believe, the sailors of the mercantile shipping) at rather above 9 per cent. This calculation, if accurate, would exhibit an enormous amount of mortality. Dr. Hunter, a few years before, computed the mortality in Spanish Town among the civil population at 10 per cent., and among the troops at 12 per cent. But this estimate, as refers to the former class, is probably much too high; among the military, it was, alas! often below the mark. Dr. Lempriere says that, according to the information afforded him, "the proportion of deaths to the number of inhabitants will be as follows:— "in the most healthy year out of four, one in 20; in the most sickly, one "in 18."

I have reason to believe that, in different parts of the island, the annual death rate is at least five per cent. of the population; but I found it impossible to obtain anything like accurate data.

The attention of the Legislature had been drawn to the importance of having a registration of births and deaths, nine or ten years ago; and in 1844 an Act was passed for this purpose. The island Secretary was appointed the head registrar, and the vestry clerks the officers in different parishes for carrying out the intentions of the Act; but, like many other measures of the island Legislature, this one has proved an utter failure. So speedy indeed was its failure, that it was repealed by the Legislative body two years after its enactment. The repealing Act, however, being disallowed by the Queen in Council, the original Act is still on the statute book; but it has for some years past been a mere nullity, as appears from the following facts. According to a return recently made by the island Secretary to the House of Assembly, for the twelve months ending September 1850, not a single birth had been registered in six or seven of the parishes, including some of the largest; while, in others, the number varied from a solitary one in Trelawny up to between 500 and 600 in Westmoreland. The same holds true as to the deaths registered; not one had been recorded during the twelvemonth in some of the parishes; in others the numbers were three, nine, fourteen, and so forth. Even in Kingston, so utterly worthless is the registry that, in the year referred to, only twenty births were registered, while no fewer than 700 deaths were entered.

Notwithstanding the notorious worthlessness of the whole affair, the salaries of the officers engaged in it are still continued at an annual expense, I believe, of about 1,200*l*. Even had the enregistration of the births and deaths been

accurately kept, it would have failed, from the imperfection of the provisions of the Act, to have afforded any information as to the causes of mortality, the localities where the deaths occurred, the exact age of the deceased, &c.

The diseases, which appear ordinarily to prove most fatal in adolescence and middle age among the coloured classes (including the black soldiers), are those of the chest and abdomen; more especially bronchitis, pleuro-pneumonia and consumption, along with dysentery, acute or chronic. Albuminuria and other forms of renal disorder are also common. The insufficiency of clothing to protect the surface of the body against atmospheric vicissitudes, particularly in the early morning,—when the negroes turn out from their close steamy hovels with bare feet and legs, and little covering about their bodies, while their heads are enveloped in napkins,—taken in conjunction with the unwholesome and unnutritious nature of their ordinary food, accounts for much of the sickness to which they are liable. The increase of consumption of late years among them is a significant fact, in the eyes of a sanitary physician. "It is very "rife in this island of recent years," says Dr. Chamberlaine, "and may be "looked upon as one of the chief preponderating causes of mortality." In the report of the Medical Officers of the public hospital for 1847, it is stated that, "the increase of patients labouring under phthisis is becoming more prevalent "throughout the island. The generality of the persons admitted, labouring "under chronic complaints, have their constitutions broken down by disorgani- "zation of the different viscera." The great prevalence, too, of other forms of tuberculous and cachectic disease points to a similar etiology. The loathsome diseases of the yaws and leprosy are beginning to be more frequent than they were some years ago. Their production is notoriously engendered by the action of bad food in connexion with squalid habits. The horrible state in which many of the wretched victims is left is revolting to humanity, and calls for immediate attention. Some particulars will be found in the Appendix (G.) Again, the numbers of lame and cripple people cannot fail to strike the stranger in traversing the country; neglected ulcers of the feet and legs are exceedingly frequent everywhere.

There is in all parts, as might be expected, a very considerable amount of *pauperism*. Much of it is, unquestionably, the result of wilful idleness; the rest is owing chiefly to disease which might have been prevented.

In *Kingston* the number of out-pensioners in 1851 was about 450, at a cost of between 4,000*l*. and 5,000*l*. sterling annually. It is calculated that nearly one third of the entire population of that town are, at all times, living without any regular occupation. The Honourable Hector Mitchell, Mayor of Kingston, says, "At the present moment, half the number of the inhabitants do not know "how to provide themselves with subsistence, and they shift among themselves "from morning to night as they best can." It is scarcely necessary to add, that there is a prodigious amount of immorality and crime. "The amount of "pauperism," says Dr. Chamberlaine, "is very great; it is becoming more "prevalent, more rampant daily. And how can it be otherwise? The laws "are mostly in abeyance, such as they are; in many instances they are a dead "letter."

In *Spanish Town*, "the amount of pauperism," says the rector, "is large." There is an assessment of nearly 1,200*l*. per annum for the relief of the necessitous poor, independently of about 300*l*. distributed by the clergy of the Established Church, and of other eleemosynary contributions. No less than 1,200 acres of land around the town, held in trust by the parochial authorities under the provisions of George II. ch. 10., and which ought to be available for the diminution of the parochial rates and for the relief of the poor, are now lying not only unproductive, but have, from neglect, become a public nuisance most pernicious to the health of the community, and are thus serving to increase the very evil which they were intended to relieve.

In the *parish of St. Andrew's*, the sum of 650*l*. is yearly spent in outdoor pauper relief. The poorhouse costs about 200*l*. more; and the expense for graves and coffins is between 50*l*. and 60*l*.; making a total of 900*l*. per annum.

In the parish of *Clarendon*, the Rev. Dr. Stewart states that "the amount of "pauperism, in consequence of age, infirmity, and disease, is very great. The "amount, dealt out in pittances of 1*s*. or 1*s*. 6*d*. per week, must amount to "upwards of 500*l*. per annum. There is no public hospital or dispensary of "any kind."

In *Westmoreland*, according to the testimony of the rector the Rev. Mr. Mayhew, "the number of outdoor paupers receiving parochial aid is 241, at a cost " of 1,000*l.* per annum, independently of 40 in the poorhouse, " at a cost of " 400*l.* There is no public dispensary or hospital. Dr. Macdonald gets 60*l.* " per annum for attending the indoor and outdoor paupers; but his services, " necessarily from the inadequate pay and the extent of the parish, are con- " fined to the immediate vicinity of Savanna la Mar."

In *St. James'* there are 220 persons on the pauper relief list, receiving parochial aid weekly. Besides this, there is a poorhouse with about 50 inmates. There is not a dispensary in the parish.

Many similar instances may be quoted. The general condition of the island may thus be judged of. It everywhere presents the anomaly of a dearth of labour on the one hand, and of a half-fed or starving population on the other.

Extreme Deficiency of Medical Assistance in the Island.—Unsuccessful Attempts of the Legislature to remedy the Evil.—Scheme proposed.

It has been seen that much of the mortality, among the working classes, may fairly be attributed to diseases being neglected in their early stage, and while still under the control of judicious medical treatment. At the present time, such neglect is almost unavoidable, from the lamentable destitution of qualified practitioners in every part of the island. Entire parishes and extensive districts, with a scattered population of many thousand souls, have for several years past been left without any medical man near them; and there is, unhappily, the pretty sure prospect of not a few of those now in the colony abandoning their profession altogether (as many have already done), unless measures be promptly taken to render it worth their while to remain. It is scarcely necessary to adduce evidence upon this subject; for its truth is so painfully known to every one at all acquainted with the existing condition of Jamaica, and every one will remember the urgent remonstrances addressed by the West India interest to Her Majesty's Government to send out medical men, during the prevalence of the late dreadful visitation.

I shall quote but one or two instances, to show the extent of the falling off in the numbers of the resident medical men.

In the parish of St. Andrew's, having an area of about 240 square miles and with a population before the cholera of about 20,000 (one tenth was swept away), there used to be, in former years, *seven practitioners* residing in different localities, and all actively occupied in their profession. Now, there are *but three; and of these, two are engaged in other pursuits, and decline practice.* There is no dispensary in the parish. A small supply of medicines is kept at the parochial asylum or poorhouse, into which a few decrepit destitute paupers are received.

To take another instance.

" In the parish of Vere, there are four resident medical practitioners. Of this " number, only one may be considered as living by his profession; the other " three possess freeholds, which mainly contribute to their support. I may add," says Mr. Tarrant, one of these gentlemen, "that my annual receipts in the " three parishes (Vere and the lower parts of Clarendon and Dorothy) for " negro practice do not average *5l.* per annum. In Clarendon I know of " three medical gentlemen leaving it, not being able to acquire a mere com- " petency; while one withdrew from practice on that account, and a fifth lived " chiefly on the proceeds of a retail drug shop, and a sixth, lately deceased, " was looked upon more in the light of a general shopkeeper than of a medical " man. *During the same period, St. Dorothy had four practitioners; three left " the island, not being able to procure a living, and the fourth died pennyless, if " not in debt.*"

It being admitted, on all hands, that the destitution of medical relief is one of the most serious social evils in the present condition of the community, and, moreover, that there is not the slightest prospect of this defect being ever supplied unless by legislative interference, it becomes a question of the greatest importance to determine how this may be most effectually done, with the largest amount of benefit to the people, while the risk of failure which has hitherto

attended all attempts to meet the difficulty shall be avoided. Pressed by the urgency of the question, the Legislature, in 1846, passed a Dispensary Act to meet the acknowledged want that was everywhere felt; but unfortunately the measure was soon found to be nearly inoperative, from causes which might have easily been foreseen by any one acquainted with the habits of the negroes. Within two or three years of its enactment it became a dead letter. The remuneration of the medical men was to be partly from a small annual allowance (40*l.*) made by the island, but chiefly from the freewill payments of the people themselves in advance, upon the condition of attendance and medicines being found them and their families during sickness. Now the negro either does not, or he will not, understand the principle of such an arrangement as that of paying for a mere prospective advantage, for which he fancies he may have no occasion; and it must be admitted that, even among the masses of our population at home, great difficulty has always been experienced in attempts to establish self-supporting dispensaries. In the case of the negro, moreover, who had been accustomed during slavery to have the doctor found him at his master's expense, there is even less reason for surprise at his unwillingness. It is indeed deeply to be regretted that when the Act of Emancipation took place, by which a semi-barbarous people were hastily released from the care and protection as well as from the oppression and ignominy of servitude, measures were not devised or precautions taken to provide for the changes, which would inevitably ensue in the condition of the people. One of the most disastrous of the results has unquestionably been the progressively-diminishing supply of medical assistance, until, as of recent years, many large portions of the country have been left nearly bare in this respect. The question comes to be, how is the defect to be supplied, and the great evil to be remedied? No subject occupied my thoughts more during the whole of my residence in the island, and likewise ever since I left it. From inquiries made in every parish among the most intelligent residents, including the planters, ministers of religion, medical men, and merchants, the following two propositions are, in my opinion, clearly deducible; viz., first, that the negro population, with their present feelings of frequent indifference as to their own lives, and their too general utter unconcern of the lives of their families and friends, will not apply for medical assistance if they have to pay for it at the time; and, secondly, that they are quite able to pay for it, if they choose to work, and earn the wages which are at all times at their acceptance.

On the first of these propositions it is unnecessary to say a word; there is not a shadow of difference of opinion upon it; it is an admitted fact. Had there been any doubts upon this point before, the dreadful exhibitions of brutal heartlessness during the cholera utterly dissipated them. I have heard many old residents say that, with all their long knowledge of the negro character, they could never have anticipated such displays of the lowest barbarism. Let it be remembered that the dread of contagion had something to do with the cruel neglect of the sick, upon many occasions; for, in more instances than one, the conduct of the negroes was most praiseworthy. This was the case with the convicts in the penitentiary, and with the troops in the barracks, not to mention other instances.

The only remark, requiring to be made, is that the negro is anything but unwilling to seek the "white doctor's" aid for himself or family, if it can be had gratuitously. I had abundant opportunities of witnessing this in my own case, when travelling through the island, applications for advice being incessantly made on the road side by persons of different ages; and the readiness with which the people have, in most parts, of late availed themselves of the offers of vaccination, while smallpox has been spreading through the land, is another instance of the same fact. It is, therefore, to be clearly understood that it is not from any feeling of dislike or distrust of the educated medical practitioner, but solely from one of repugnance to part with their money for his assistance, that the people now so generally allow disease to take its own course, or, at most, apply to ignorant impostors of their own colour—who, there is too good reason to believe, often blend the practice of superstitious rites with their mischievous prescriptions. Whether this be so or not, there is no doubt that Obeahism and Myalism are on the increase in many districts of the island, and that, of course, the people are consequently lapsing deeper into ignorance and barbarism.

With respect to the ability of the negro population to pay for medical assistance, it need only be stated that, even at the present reduced rate of wages, an active agricultural labourer may often earn 1*s.* 6*d.* or 2*s.* a day, and at times more. True, they very generally receive not more than one half of these sums, and that, too, for only three or four days in the week; but this is their own fault. They will seldom work above five or six hours in the course of the day, and very rarely upon Fridays or Saturdays at all. These days they generally spend upon their plantation grounds, which they either rent or may have bought for a trifle; and where, with very little labour, they raise yams and other vegetables and fruits for an adjoining market. The profit upon these provisions is large, and thus enables them to be more or less independent of working upon the estates. Saturday, being market day, the women flock in troops to the towns to sell their produce; often walking eight, ten, or twelve miles to market, and thence back at night, although they could dispose of it as advantageously within a mile of their huts. But they like the holiday-sort of excitement of meeting together, chattering, and bargain-making; and, moreover, they have to buy their salt-fish and fineries in the towns. Unfortunately, there is of necessity a prodigious waste of time and labour which might be more profitably expended, and which is sorely needed for the sugar estates all round. Dozens are engaged where, under better management, two or three might suffice; and this remark applies to the people in the towns, as well as in the rural districts. While the women and children are thus employed with much superfluous toil at market, the men are usually lounging about the hut the greater part of the day, and then ride about afterwards upon their ponies. In some districts, the women go to market on mules and ponies. The average price paid for these animals is 9*l.* or 10*l.*; there is, moreover, a tax upon each of 10*s.* a year.

It is thus obvious that there is an immense amount of producible labour in the island running to waste, so to speak, from the energies of the people not being called forth by the stimulus of necessity on the one hand, and from their being often expended in profitless exertions on the other. A wise legislator will consider how such labour is to be made available for the real interests of the individual, and for the general benefit of the community. The negroes, and indeed the creole population generally, have little idea of the value of time; an hour is often spent in doing what an European labourer or servant would do in a few minutes. They are, from this habit, generally unwilling to make use of any new instruments or tools to facilitate the dispatch of work. In nothing is the wasteful expenditure of money and labour more conspicuous, than in the common practice in Jamaica of yoking eight or ten oxen to a cart or a plough, when the same amount of work would, it is well known, be done with two or four in the adjoining island of Cuba.

If the condition of the agricultural labourer at home be compared with that of the negro in Jamaica, it will be found to be decidedly more toilsome; while his wages are often not greater, and the value of these wages is of course much inferior. The very facility of subsistence in Jamaica is at the root of much of the indolence and wasteful habits of the people.

It was from a consideration of the above two positions that I was induced to recommend (in my letter to the Governor, vide Appendix A.,) the adoption of a *special and direct tax* upon all classes of the community, from the highest to the lowest, for the purpose of carrying out an effective scheme of providing medical relief for the labouring population. "If it be desirable that the people," I remarked, "should feel that they have a claim for medical relief for themselves and families in time of sickness, that it is not a boon of charity doled out to them, but a right to which they are entitled, then the course appears to me clear; the right which is claimed implies the performance of a duty that has been discharged. The habitual exercise of such a feeling will, moreover, not be without some effect in gradually accustoming the mind of the negro to take juster views of the reciprocal obligations and privileges of civilised life."

All my subsequent inquiries and observations have but tended to strengthen the opinion then expressed.

Even if the necessary funds could be provided by indirect taxation, I should deem it unadvisable to do so; and for this simple reason, that it seems to me to be of the utmost consequence that the people should know for what they are called upon to pay, and thus be made to appreciate the benefits which they

are to receive in exchange. There is nothing in the character of the negro to forbid the hope of, even rapid, improvement and social amelioration, if he be not left to himself, or at the mercy of political or mercenary traffickers; he is quick, shrewd, and apt to learn when he chooses, and works hard if he has an object in view; he makes a good soldier, boatman, and even pilot; he is marvellously improved if he has had an opportunity of visiting England; he then aspires to have English habits. There are many points of resemblance to the Irish character about him.

The following are the sentiments on the subject of various gentlemen, in different parts of the island. From their long residence, and their thorough acquaintance with the habits and wants of the people, they are well entitled to very serious consideration.

"The welfare of the island," says the mayor of Kingston, "depends upon a "legislative enactment to provide the island with the necessary medical assist- "ance, and to enforce the rules necessary among an ignorant population for "the preservation of life. The experience of the island shows that medicines "and medical aid should be provided for by the Legislature, whether it would "be willingly acceded to or not."

"A medical relief tax," remarks Dr. Downer, one of the oldest and most respected medical practitioners in the island, but now almost retired from practice, "is the only method by which a fund could be raised equal to the "object to be carried out. Such a tax would be paid more willingly, when the "peasantry were made to comprehend its motive, than any other tax now in "existence. No system will answer but the imposition of a direct tax."

The Reverend Doctor Musson, rector of St. Catharine's:—"I cannot point "out any method but a capitation tax. This may be objectionable; but enter- "taining as I do that every man is bound to take care of his own life, as wel "as care for the lives of those dependent on him, I think that he should be "compelled to provide medical aid for his family. If this be not done, our "already too small labouring population will be enervated and diminished."

The Honourable A. Bravo, custos of St. Dorothy, and one of the members of the Council:—"Undoubtedly, there should be some legislative provision to "secure the presence and services of a medical man in the parish. I consider "that a small tax imposed for the purposes of providing medical aid would be "willingly paid by the inhabitants generally, provided some reduction was "made in the heavy taxes now imposed."

The Honourable A. Burke, custos of Metcalfe:—"Such a measure (a medical "relief tax) would be very beneficial, but would not, in my opinion, enlist the "voluntary support of the people. The habits of civilized life have yet to be "formed; a direct tax for this purpose would raise the negative principal "of their nature into active antagonism, and thus defeat its own end. The "only way they can be made to contribute to the end in view is by indirect "taxation."

Dr. Allan, Manchineal District:—"The imposition of a tax by the Legisla- "ture under the denomination of a medical relief tax, and under judicious "arrangements, would I think be now paid willingly."

The Reverend Doctor Stewart, rector of Clarendon:—"I think the tax "alluded to would not be very willingly paid at first, but I believe that the un- "willingness would soon wear away. I am certain that nothing effectual can "be done without its imposition, and that it ought to be laid on the person."

The Reverend Dr. Williams, rector of St. James:—"Taxation seems to be "the only mode of procuring the means of doing for the peasantry what they "so much require."

The Reverend Mr. Mayhew, rector of Westmoreland:—"It would be very "unwillingly paid as a tax. If a tax were laid, it would seem advisable to con- "tinue the house tax for that purpose, when it has paid off the expenses of the "cholera."

The Reverend Mr. Cook, rector of St. Thomas in the East:—"I have not "the least doubt but that it would be as willingly paid as a tax for any other "purpose; and a capitation of two shillings on all persons, from the age "of fifteen to fifty, would give a sum perfectly sufficient for all sanitary "purposes."

And lastly, the Central Board of Health, after weighing all the evidence which had been brought before them in answer to queries which had been

issued on the subject of providing medical relief for the labouring population, declare their opinion that "to effect the desired end, it will be requisite more "or less to exercise coercion, to make stringent laws which shall compel them "to do what is deemed right for their own good, and the good of their pos- "terity." The Board also concur with me, that "any new measure which "may be adopted for the purpose of providing medical relief, in order to "secure its general adoption and approval by those whom it is chiefly intended "to benefit, must be based upon the principle of the relief being furnished "to the poorer classes without any direct charge, at the time, to the persons "requiring it." I believe that the practice of a compulsory special taxation, for providing medical relief to the body of the people, is in use in the island of Ceylon.

The chief objections which will be made to the scheme, which I have proposed, will probably be two-fold; viz. 1, the difficulty of collecting the tax, from the population being often much scattered, and possibly also from the repugnance of many of the people at first; and, 2, the inability of the island, in its present impoverished condition, to bear any further imposts. The difficulty alluded to would not, I suspect, be so great as some persons imagine; and as to any resistance of payment, that might be easily overcome with firmness and decision on the part of the magistracy. With respect to the financial depression of the island, it is to be borne in mind that the remark may hold true (as it unquestionably does) of the planting, commercial, and professional classes, but not of the great bulk of the people whose welfare is chiefly sought by the contemplated measure, and who should therefore mainly contribute to its achievement. Moreover not a few expenses, parochial and general, would, I feel confident, be saved if the public health were improved, if disease was prevented and mortality diminished, and if a general supervision of the habits and mode of life of the people were maintained by paid resident medical men,—who should be required to act not only as attendants upon the sick and suffering, but also as *sanitary inspectors of their districts*, *vaccinators*, *and registrars* of births and deaths. It should ever be remembered that there is nothing more wastefully expensive to a community than sickness among the labouring classes. Jamaica herself can testify to the truth of this, by the events of the last two years. Among other results of the system proposed, may reasonably be expected *a diminution of crime*, and of the costly machinery for its detection and repression. For prisons and penitentiaries alone, the island has to pay upwards of 20,000*l.* a year; and, for the police, 22,200*l.* And here I cannot but remark that while about 17,000*l.* annually is voted for the judicial establishment of the colony, in salaries of from 3,000*l.* to 1,200*l.*,—independently of other functionaries connected with the courts at a charge of 3,000*l.* more, and of twenty stipendiary magistrates, who are paid by the Imperial Government,—and 30,000*l.* for the stipends to the clergy of the Established Church (not including the stipends of the bishop and of the three archdeacons, defrayed by the Imperial Government), it is surely but reasonable that something should be done at the public expense for the carrying out of measures, which intimately affect the moral as well as the physical well-being of the community. There is also a yearly vote of money, for the keeping of the fortifications and defences in repair. Surely, it would be but wise to guard against constant foes within, much more formidable too than any from without. The only sums, at present voted by the Legislature for objects connected with the public health, appear to be 1,120*l.* for quarantine officers, and a few hundreds more for medical attendance on the prisons and asylums; for we cannot regard the 8,000*l.* voted to defray the expenses of the public hospital in Kingston as, strictly speaking, a sanitary grant. This is to arrest the evil already done, not to prevent it. It is not unworthy of notice here, that the visitation of the cholera was estimated to have cost the island in March 1851, or only five months after its first appearance, not less than 50,000*l.*; irrespective of a very large amount of benefactions by private individuals wherever it broke out, of a grant of money and other charges from the British Government, and of aid from some of the other West India colonies. Had the 10,000*l.* a year which the colony now finds it itself obliged to raise for the next five years, in order to defray the "cholera expenses," been expended judiciously in correcting and supplying the defects of the island during the five years preceding the visitation of the pestilence, what an amount of suffering, distress, and death might have been, under God's

blessing, prevented! Now, the great question comes to be, how is the recurrence of a like disaster to be guarded against? That some measure must be devised for providing medical assistance to the bulk of the people, since they will not do it for themselves, must be admitted by all. And whatever may be the apprehended difficulties in the way, surely no opportunity can be more fitting than the present, when the need has been so severely felt by all classes, the labouring as well as the proprietary, and when *the island, after being scarcely free from one pestilence, is again brought under the dominion of another* (*the smallpox*), *and the people are flying in all quarters to the medical men for preservation by the use of that very means* (*vaccination*), *the neglect of which is the main cause of its diffusion.* This second disaster was not unforeseen, nor was the local Legislature unforewarned; I had urgently pressed the consideration of the subject upon them, in my letter to the Governor in the early part of last year. There cannot, I should think, be a reasonable doubt but that *vaccination* should be made obligatory by law among a semi-barbarous population like that of Jamaica, as it is in the island of St. Thomas, in Cuba, and in other foreign West India islands; and that *variolous inoculation* (which is occasionally practised) should be interdicted there, as in this country. If the present time be not seized for wise and decided legislation, it will in all probability be in vain to attempt it hereafter. The very fact of relief having been afforded, from the public money during the cholera, will be regarded by an ignorant and selfish people as a precedent for like assistance being granted in future, and will thus serve to confirm them in their reckless apathy, and in their repugnance to bear their share in the general burdens of civilized life. It may be here noticed that a bill has been introduced into *the House of Assembly*, during the two last sessions, for the purpose of supplying the want of qualified medical practitioners in the island with *a set of half-educated men to be instructed at the public hospital in Kingston*, where there neither is, nor can be, the means of affording anything like a professional education. The very proposal, while it is too ridiculous ever to be sanctioned by the intelligent members of the local Legislature, far less by the Government at home, serves, however, to show the acknowledged seriousness of the evil to be remedied.

This may be a fitting opportunity to allude to the subject of the *coronership in Jamaica.* Not a little expense is incurred in maintaining an office which, as carried out there, is all but valueless, from the incompetence of the persons who are generally elected. It requires, of course, a man of education to discharge its duties; but this qualification has been but little regarded; and hence, at the present time, the office is held by petty shopkeepers, reduced planters, and others who have managed to obtain the favour of the masses. Many unnecessary inquests are reported to be held, the coroner being paid by fees. In not a few instances, no medical evidence is taken; and the verdict generally recorded is "found dead." The incomes of the coroners vary from 100*l.* to 250*l.* or 300*l.* per annum, independent of expenses for travelling; and as each parish (twenty-two in number) has its coroner, the yearly charge to the island is not inconsiderable.

I would suggest that in a country like Jamaica the coroner should invariably be a medical man. The duties might be performed by the paid district medical officers, at a much less expenditure to the island than is at present incurred. A report of each inquest should be required to be forwarded to the Central Board of Health.

The negroes, it may be remarked, have an exceeding aversion to inquests being held; and hence they will often call in a regular medical practitioner to see their dying relatives, who had been cruelly neglected during their whole illness, merely to avoid the necessity of a public inquiry which might otherwise be called for. It might be well that part of the expenses of the inquest should be imposed upon the party involved, whenever neglect of the deceased can be proved.

With the view of giving every encouragement to the settlement of respectable medical men in the island, it would be right that such offices as inspectorships of prisons, emigration agencies, &c., which have hitherto been generally bestowed upon stipendiary magistrates, were bestowed upon them. As the patronage is, I believe, vested in the Governor, a recommendation from the Home Government would effect the object in view, if approved of. A searching inquiry into the state of the prisons and workhouses, in different towns, is

much wanted. The condition of some of them, which I visited, is shockingly bad. To detain culprits in such places can only render them more depraved. Their inspection might be one of the duties of the district medical officer; he should make an annual report. All low lodging-houses also require to be under a similar supervision.

Having thus explained my views on the subject of "Medical Relief," I proceed to point out, in detail, the other legislative measure which the island stands equally in need of; viz., an efficient "Nuisances Removal and Disease Prevention Act."

A proper *Nuisances Removal and Disease Prevention Act* should contain provisions of unmistakeable application, and at the same time of ready enforcement, for the correction or abatement of whatever is noxious to the public health, and tends to favour the development and malignancy of disease. The following are the points which it should especially embrace:—

1. The frequent systematic removal of all decaying or decomposable refuse from towns, and from the immediate neighbourhood of dwellings in any place.
2. The improvement of the dwellings of the lower classes.
3. The regulation of interments.
4. The regulation of markets, and of the provisions sold for human food; also, of noxious trades in towns.
5. The drainage of swampy lands, or their filling up, in and around towns.

With respect to the first of these requirements, there is perhaps no country in the world where its immediate adoption is more called for than in Jamaica, and in no town more so than in Kingston.

The simple principle should be ever kept in view that wherever there is organic matter, whether of a vegetable or animal nature, undergoing decay, and whether the process of decay be attended with offensive effluvia or not, such matter is continually giving off a vapour which contaminates in a greater or less degree the atmosphere around it, and is therefore injurious to him who breathes it. Its effects on health may not be immediate, nor are they generally recognizable except when the evil is of lengthened continuance, or when the human body exposed to its influence is in an enfeebled condition. The same thing holds true equally of minute quantities of poisonous matter, taken into the stomach; they require to be very frequently repeated in the case of a person in ordinary health, before their pernicious action is perceptible on the system. If such then be the case, it is obvious that, unless there is a frequent—in tropical countries, it should be a daily—removal of all such matters from within and around human dwellings, there must be a constant source of atmospheric impurity, and consequently of deteriorated healthy existence, if not of actually developed sickness. As long as we ignorantly or wickedly contaminate the freest gift of the Creator—the air we breathe—by keeping corrupting filth about us, instead of returning it to the earth which it is designed to fertilize, we must pay the penalty of much unnecessary disease and premature death.

It is quite unnecessary to specify particular nuisances in towns requiring correction, if the simple rule given above be attended to. No exception must be made, and no exemption allowed, nor the possibility of any concealment or neglect permitted; and, with this view, full and ample powers should be granted to the proper officers to enter and inspect grounds and premises, and every violation of the law be summarily punished. I have already shown that, in Kingston more particularly, no plan of effective scavenging can possibly be carried out, until the state of the streets be improved.

A most important point to determine is, what should be done with the refuse of towns, when collected together and removed to some distance. Hitherto, the common practice has been to accumulate it in heaps, at what has been considered a sufficient distance in the outskirts, if it has not been pitched out upon the surface wherever a vacant spot could be found. Such practices should henceforth be utterly disallowed, while the existing accumulations should be promptly and effectually got rid of. This may be readily done, and by very simple means. *Whatever is combustible, let it be destroyed by fire; whatever is not, let it be covered with earth.* It is a beneficent provision of nature that in both of these ways matters, which are otherwise noxious to the life of man, not

only are most easily got rid of, but become the means of positive benefit to him, by increasing the fertility of the ground to which they are applied. The instrumentality of *fire* has not, yet, been had recourse to for this purpose nearly so much as it ought to be, and especially in tropical climates, where the excessive luxuriousness of production necessarily gives rise at all times to a large amount of organic decomposable debris, independently of much of the collected refuse of towns and dwellings. By no other expedient, can such waste matter be so speedily and so effectually destroyed; when burnt, it can no longer be a source of offence; and the very innocuous ashes which remain may be turned to useful account. The important point is that what, if left on the ground, will inevitably be productive of evil, can at once and with little trouble be thus entirely got rid of. It was doubtless as a sanitary provision that such express injunctions were given, in the Mosaic Code, to the Jewish people to destroy with *fire* all the refuse and garbage of their sacrifices; and it is well known that in a valley around Jerusalem the fire was kept continually burning, for the very purpose of consuming whatever might offend within the walls of the city.

These hints from the sacred record should not be overlooked; they are highly suggestive. By acting in the way recommended above, one at least of the most pernicious nuisances in and around Kingston and Spanish Town might be removed, in the course of a week or two. No places of permanent, or even of lengthened, deposit should ever be allowed. Whatever is taken to them should be forthwith consumed or interred.

With respect to fluid and semi-fluid excrementitious matters, they should be dealt with by *at once committing them to the ground, and covering them with a sufficient layer of earth*. Nothing can possibly be worse than the privy nuisance in all the towns in Jamaica; huge receptacles of ordure in the most offensive condition. Nowhere, too, are they more disgusting than in most of the barracks. Great public good would be done, if the military authorities were to set an example, in the right direction, in this matter; the civil population would follow. It is, I fear, in vain to expect at present a general system of connected underground drainage in Kingston, or any other towns in the island. There are many and almost insuperable difficulties in the way; sometimes from the very large extent of the area to be drained; at other times from the nature of its site, from the want of due water supply, &c. Recourse must therefore be had, for some time to come, to other means of more ready adoption.

For the correction of existing privies, no expedient is so simple and effectual as to regularly cover, at short intervals of time, the ordure with a layer of earth. The charcoal also from the firewood, used in the kitchens, may be advantageously used for the same purpose. By the successive applications of these layers of earth, not only would the escape of the offensive effluvia be in a great measure prevented, but the subsequent periodic removal of the contents be rendered infinitely less disgusting, and the conveyance of these contents to a distance for the purposes of manure be much facilitated.*

In the construction of new houses, another system should be pursued. It should be based upon the principle of frequent, and, if possible, daily removal. No accumulation should ever be permitted. If this once takes place, the evil becomes very unmanageable in buildings, where numbers of persons are congregated together. For this reason, I strongly suspect that nothing can be done in effectually correcting the present huge pits at Up Park Camp and Spanish Town. They require to be filled up, and a better system established. They are a disgrace to the service.

I would here remark that it might be desirable, upon more considerations than one, that *convict labour be made available* for the efficient carrying out of certain works, connected with the purification and sanitary improvement of towns. From the indolent and filthy habits of the negro population generally, difficulty will doubtless be experienced in obtaining voluntary labour, at all times, for the constant and unremitting work required. In no manner, could offenders be more properly or more usefully engaged than in the way proposed; they would be effecting a good for the community, and be at the same

* It is to be regretted that tramroads have been so little used in Jamaica; they would add much to the facility of ready transit for a variety of purposes. The carriage road between Spanish Town and Kingston seemed to me well suited for a tramline; nowhere was one formerly more required.

time taught some very profitable industrial lessons, of no small consequence for the working classes to understand. It was with much pleasure that I saw, shortly before leaving Kingston, several of the prisoners from the penitentiary actively employed in carting the dung and other refuse from the lower end of the eastern gully (the ravages of the cholera had been truly dreadful in the neighbourhood), and others delving it into the ground at the New Lunatic Asylum, where a vegetable garden has recently been established. Let but like work be done elsewhere; and, ere long, a mighty change for the better would be visible in and around all the towns in the island. It must of course be systematically and continuously carried out, to be of permanent benefit. There is a great deal of waste unprofitable land about Kingston and Spanish Town, which might be turned to excellent account in the way recommended.

If the great value of excrementitious matters to the land was more generally recognized, and the speedy neutralization of all their offensive properties, when so used, was better understood, a great impulse would be given to the introduction of a better scheme for their removal from towns, and the vicinity of dwellings. The subject is, yet, new to the cultivators of the soil even in our own country, and is only now beginning to meet with the attention it so much deserves. It has not entirely escaped the thoughts of some of the more intelligent residents in Jamaica. For example, Dr. Bayley of St. Anne's Bay told me that, for some years past, he has been in the habit of carting away as much of the house soil as he could conveniently obtain from the town for his property a few miles distant, and that he only regretted that he could not procure much more. Mr. Shaw, the manager of several estates near Port Maria, wrote to me in these words:—"I shall be most willing to remove all the rubbish and "privy filth from this town, free of expense, provided the inhabitants would "put it in a place where carts could readily get at it. I consider the refuse "thus collected as most valuable for manuring cane-fields, and that sugar estates "within a moderate distance of towns would gladly avail themselves of such "supplies, if brought to their notice. In localities where sugar properties are too "far removed, the rubbish and filth might be advantageously used for manuring "guinea grass." Mr. Porteous, the proprietor of some fine estates a few miles to the north of Kingston, said that he was ready to take away much of the filth from the city for his fields, if the expense of cartage was not so great, in consequence of the exceedingly bad state of the roads. There cannot be a doubt but that the whole of it might be most advantageously disposed of with great ease, if this impediment were removed. Independently of the direct and immediate benefit to the town on the one hand, by getting rid of a prolific cause of ill-health, and to the adjoining properties on the other, by supplying them with what is often very much needed for the land, a most useful industrial lesson would be taught to the creole population, who in all that they do are wasteful as well as indolent. It is a common practice of negroes on their provision grounds to exhaust the land by a few years cultivation, and then to move off to another spot, there repeating the same operation. They have little or no idea of manuring the soil with the very pig-dung, which is poisoning their abodes; it is allowed to accumulate, year after year, in the sties around them. Even on well-ordered estates, there is much valuable fertilising matter lost from the rapid evaporation of its volatile portion, by the manure lying on the surface, for a length of time, under the action of a tropic sun. The cattle are usually penned upon different parts in succession of the cane-fields, while the leafy tops of the canes, which have been left on the ground during the process of cutting, afford a very nourishing provender. Sometimes the amount of dung, collected in pens close to the works on the estate, is very great, and of course exceedingly offensive. If the principles and practice, propounded in the "Minutes of Information on the Application of Sewer Water and Town Manures to Agricultural Production" of the General Board of Health, shall ever come to be carried out in Jamaica, an immense amount of good would result, I should think, to the planting interest. It appears to me that they are singularly applicable to the cultivation of the sugar cane, which, from the rapidity and luxuriance of its growth, is necessarily a very exhausting crop to the land. Moreover, on every estate there already exists a moving power, either steam engine or water-wheel, whereby liquid and liquified manures could be distributed over the fields. I suspect that the offensive refuse of the stills, or

'dunder' as it is called, might be advantageouslv applied to the ground, instead of being cast out as refuse in the neighbourhood of the works, stenching the atmosphere around.

Improvement of the Dwellings of the People.

There is certainly no subject which more urgently demands immediate attention than this. The domiciliary condition of the mass of the people in Jamaica is wretched in the extreme; it is scarcely possible for it to be worse. What a reproach to England and to Englishmen that a country, which has been for two centuries under British rule, should exhibit such a state of things! I am confident that, until measures be taken to correct this worst of all the social evils, it will be vain to look for any real or permanent improvement among the negro population. To spend money in efforts to educate or evangelise them, with their present habits, has been tried, and it has proved a failure; and so it ever will be, unless their physical condition be elevated and improved. There are, I believe, upwards of 200 ministers of religion, belonging to different sections of the Christian Church, at the present time,—and a few years ago, the number was still greater,—among a community of between three and four hundred thousand inhabitants; nevertheless, it is an acknowledged fact that the bulk of the people are retrograding, both in morals and in enlightenment. Surely then, there must be some strong countervailing agency at work. I believe that there is; and, moreover, that it is the very same cause to which the excessive virulence and dreadful fatality of the recent pestilence may fairly be ascribed, viz., the existing wretched state of their dwellings. Physical debasement and pollution are invariably associated with distempers alike of mind and body; and as long as the evil operation continues, these distempers will be found to be but little amenable to treatment. We must begin by withdrawing the patient from the atmosphere of corruption around him; he must be brought into a purer medium. This is the great pre-requisite. Then our remedies may be reasonably expected to have some effect, but not till then. It is not so much *instruction* as *education*, or right *training*, that is wanted among the masses in Jamaica.

No mere alteration or repair of the present dwellings of the negroes will do any good; they are radically and essentially bad, and scarcely admit of improvement. They must be remodelled and entirely re-constructed. As they are generally of little or no value, this might be easily done, and with little hardship to the occupant or owner. Legislative interference may do much, if it cannot do all. A very large proportion of the worst hovels are actually freehold tenements, and confer the right of franchise on the holders. Such is well known to be the case in Kingston to a very great extent; and it is the same over the island generally. The results are as mischievous in a social, as in a sanitary, point of view. The people become the dupes and tools of electioneering intriguers, while they are left to grovel in the vilest squalor and vice. In the towns, more particularly, the system gives rise to endless jobbing and chicanery. It is notorious that, in Kingston, there is a daily and hourly violation of existing wholesome ordinances, from a collusion between the lowest body of the electors and the occupants or aspirants of office. Public situations and posts are given away to persons utterly incompetent for the discharge of their duties; while, at other times, the most mischievous absurdities are perpetrated with the knowledge, or even at the bidding, of the corporation. Now, *might not advantage be taken of this state of things, and good be educed out of evil, by requiring that every tenement, in right of which the franchise is enjoyed, should be of certain dimensions, and be provided with certain accommodations? Such a provision in the electoral law would be productive of an immense amount of good, in many different ways.* But, of course, my present remarks have reference to the subject mainly as a means of effecting domiciliary amelioration, under a sanitary point of view; and, moreover, its moral and social bearings are too obvious to stand in need of any comment. Improved dwellings necessarily beget a desire for increased comforts; and this, in its turn, is a stimulus to exertion and industry. I had an opportunity of witnessing this result most strikingly on Arcadia estate, in Trelawny. Nothing is more decivilising, as well as demoralising, than a squalid abode. I would therefore urge most earnestly

upon the consideration of the colonial Government, as well as of the local Legislature, some such measure as that proposed to improve the domiciliary condition of the people; lying, as this does, at the very root of any social amelioration. Something, it is obvious, must be done, if it be only to prevent the extension and perpetuation of the present evil.

Although no individual exertions, nor the effects of philanthropic associations, can ever be expected to introduce this much-needed change without the direct interference of legislative enactment, yet *much good might be done, and great aid to the cause be afforded, by the proprietors of estates improving the cottages upon their properties, and, when they lease portions of their land to the negroes, by requiring a better description of dwellings to be erected upon them.* At the present time, a large proportion of the peasantry squat themselves down in any unoccupied hut in an estate village, and pay no rent for the possession. Industrious and cleanly habits are not to be looked for under such circumstances. The absenteeism of the proprietors has acted in Jamaica as it has done in Ireland; the care of the peasantry has been left to middlemen, who can never be expected to take the same interest in the welfare of the people on an estate, as the landlord himself. One cause, doubtless, of the superior prosperity of the Spanish West India colonies is the residence of the landed proprietors.

I may here observe that Mr. Stanford, a gentleman in Annotto Bay, a few years ago constructed several wooden buildings, and let them out to the people. Each building is divided into three compartments or rooms, separated by a partition which is, wisely, not carried up the whole way to the roof. Their dimensions are too small; but in other respects they are vastly preferable to the ordinary hovels of the people, being raised off the ground, floored, and shingled. They are built of pitch pine, at an expense of very nearly 26*l.* each. If white pine be used instead, the entire expense would not, at the present time, exceed 15*l.* For the first two years, each room fetched 1*s.* 6*d.* weekly, (I found, upon inquiry in different parts of the island, that as much as this was often paid for the occupation of a fisherman's hut, the whole materials of which were not worth five shillings), and they were all occupied; thus yielding a very liberal interest on the outlay. Last year (1850), a shilling only could be had, and, moreover, the rent was not paid nearly so regularly as before. Mr. Stanford attributed this less to the actual poverty of the people, than to their idleness and reluctance to pay. There were decidedly fewer attacks of cholera among the occupants of these cottages, than in most of those in the immediate neighbourhood.

I would offer the *following suggestions for the improvement of dwellings for the labouring classes.*

1. An elevated and dry situation should always be preferred. At the present time, they are very often in deep hollows and along river courses. So little attention has generally been paid to the site, that I have seen dwellings put down on the very edge of a foul morass, while a comparatively wholesome spot is near at hand. This is strikingly the case at Rio Bueno, not to mention other places. A common belief, in this country, is that the negro suffers little from malaria. This a great mistake. Although less susceptible than the white man, he is anything but proof against its evil influence, and requires pure air as much as his fellow for the development of his physical energies. There is a great deal of remittent fever among the coloured classes. Their comparative immunity from the more deadly form of the disease, known as yellow fever, has misled many medical writers upon this point.

2. Whatever obstructs the free perflation of air around them should be removed. They are usually so imbedded in bush, that they are not visible till you are close upon them. In towns, they are hemmed in with old wooden fences, to exclude them as much as possible from observation. No habits of cleanliness can ever be enforced, as long as this practice continues. The necessity of opening up the huts of the peasantry, by destroying the bush around them, was recognized and acted upon by the magistrates during the cholera. It is equally great at all times. Fences of *pinguin* are a cause of much filth around dwellings. They are *interdicted by law on the parochial lands around Spanish Town, but the law is not attended to.* Rank wild vegetation in the proximity of dwellings should always be avoided. "In wet weather," says the editor of the Jamaica Physical Journal, "the inhabitants of those houses, around "which there is no free perflation are, for the most part, affected with inter-

" mittent and bilious fevers." Numerous instances were mentioned to me, by the medical men of the island, where the salubrity of a residence had been either much improved or had become deteriorated by the thorough clearing on the one hand, or by the neglect on the other, of the ground immediately about it. Dysentery has been much less pregnant of late years among the troops at Newcastle barracks, since the bush in the neighbourhood has been kept well down.

3. The dwelling should always be elevated from off the ground. This may be done either by pillars or supports at the angles, leaving a vacant space (previously drained) beneath the floor, or by there being a solid raised or terraced pavement. If the former plan be adopted, no rubbish or filth should be allowed to collect in the open space, as is too frequently the practice now; pigs, poultry, and goats find a retreat there. There should always be a tiled gutter around the building, to carry off the rain, and prevent it soaking into the ground close to the walls.

4. Every dwelling should have at least two, and if possible three, apartments. No domestic decency can be otherwise maintained. Moreover, the mere amount of space which such accommodation implies is necessary for healthy existence, whenever, as at night, there is not free circulation of air. The negro houses upon Arcadia estate—they were decidedly the best which came under my observation—were each provided with three rooms, the intermediate partitions not being carried up to the roof. There should always be a porch in front; it serves for shade during the day, in lieu of the rank vegetation now in use, and facilitates the necessary ventilation of the apartments. With respect to this last-named subject, I have explained my ideas fully in my observations on barracks in the Appendix (E.) I shall only remark here that there can be no *proper ventilation* without some openings in or near *the ceiling*, for the escape of the respired air. They would serve, moreover, for the issue of the smoke from the fire, which the negro often kindles in his hut at night to keep himself warm.

It would be well if the use of *thatch* for roofing was discontinued, and shingling or tiling were always substituted. In dry weather, the former is a receptacle for filth and vermin; and after rain, it becomes like a wet sponge. The more general use of paint would be a great aid to the cleanliness of dwellings.

My only motive for alluding to the subject of *draining wet lands in and around towns*, and the *filling up of morasses* so situated, is that it affords me an opportunity of remarking that, to the best of my knowledge, the use of earthenware tubing and pipeage has not yet been introduced into Jamaica. As these articles might be easily made in the island, their mention here may not be entirely valueless. The substitution of such inexpensive materials for costly brickwork cannot but greatly facilitate all works of civil and agricultural engineering. I have, in the description of Kingston and other towns, alluded to the courtyards of houses being so often left unpaved. It would be well if the use of tiles (which, it may be remarked, can be made in large quantities in the Penitentiary,) were more generally resorted to, for this and other purposes of surface-draining and surface-cleansing, &c.

The mention of these subjects leads me here to remark, that a very large amount of benefit might accrue to the general improvement of the colony from the suggestions and advice of an able civil engineer, thoroughly acquainted with all the recent improvements in drainage of towns and lands and other collateral subjects, embracing more particularly agricultural chemistry and engineering. Large sums of money have at different times been expended on works, the construction and arrangement of which are evidently most faulty. Witness, for example, the works for supplying Kingston and Spanish Town with water.

Interments near Human Dwellings.

On the subject of interments I have little to say. Every one recognizes and regrets the evil of burial grounds within towns, and close to the abodes of the living. The divisions of religious sects has, unhappily, tended to introduce a most unnecessary and injudicious multiplication of places of interment. Hitherto, there seems to have been no restraint upon the practice. I presume that there

can be scarcely any difference of opinion as to the desirableness of there being, wherever it is practicable, but one cemetery for a town or populous district, and of this being always at a considerable distance from habitations.

The holding of wakes, especially at night, should be inhibited.

Food of the People.

That there should be a more strict supervision of the food, that is in all parts publicly sold to the negro classes, than there is at present will be admitted by at least every medical man in the island. It cannot but be productive of mischievous effects upon the health of those who make use of it. *Local laws and ordinances exist upon the subject, but they are not enforced;* and the quality of the provisions, openly retailed in every town, has of late years been worse than ever. The state of the *markets*, too, is another civic nuisance which requires correction. Upon this subject I beg leave to remark that the office of clerk to the markets in Kingston, (the presentation to which is in the gift of the Governor,) might be turned to most useful account, if responsible duties in connexion with this important branch of medical police, the alimentation of the people, were required of him who is appointed. It is a lucrative office; but hitherto has been a mere sinecure. I mentioned the subject to Sir Charles Grey, who admitted the reasonableness of the suggestion, and the public advantage that would result from its adoption.

The ordinary diet of the negro in Jamaica is ill calculated to rear a healthy race; he fasts long, and then gorges himself to repletion. Before quitting his hut in the morning he takes a cup of coffee, wraps up his head and throat to keep them warm, leaving his nether extremities quite exposed. He goes to his work, and continues at it till about noon; then eats a little yam or coco, but takes no regular substantial meal; returns to his work for an hour or two or longer, and goes home. The chief work of the day is thus done upon a nearly empty, or, at all events, an ill-fed stomach. His chief meal is his supper, which usually consists of salt, often rancid, fish with different sorts of breadkind and other vegetables; of this he eats enormously till, as he says, he feels his belly full; in this state, he lays himself down to sleep. Considering such a mode of life, in connexion too with the unwholesomeness of his hut, who can wonder at the destructive virulence of the cholera in Jamaica.

The exceeding frequency of *Vermination* among the black population, more especially in early life, is a sure sign of the unnutricious diet on which they live. Large lumps of aggregated worms were often discharged during the first evacuations of a choleraic attack, particularly if a dose or two of calomel had been administered; in some cases, they were discharged upwards as well as downwards.

In connexion with the subject of the food of the people, I may be permitted to add that every possible encouragement should be given to promote a taste among the negroes for such articles as flour, fresh meat*, butter, cheese, &c.; as it is only by substituting provisions of a better description, and bringing these within the reach of all, that we can hope to detach human beings from the use of such as serve merely to satisfy the cravings of hunger, and which can be obtained with the least amount of exertion. A very significant fact, bearing upon this subject, is that the *negro soldier is quite as particular as to the quality of the rations served out to him as his white comrade;* nor would he be satisfied with what he had been accustomed to, before he entered the service. Indeed, what has been already done for the troops is what I am anxious to see carried out for the civil population, whose condition and improvement ought to be objects of as much solicitude to a wise government as those of the soldier.

Hitherto, the negroes have not been at all addicted to intemperance, as regards the use of intoxicating drinks. Of recent years, however, they have begun in some districts to distil rum for themselves;—a small still may be had for 1*l.* There is reason, therefore, to fear the consequences amid such a population.

It is by two such enactments as those, which I have sketched in the preceeding pages, that the supply of the grievous defects and the correction of the

* It is a strange, but perfectly true, fact that the markets of a country like Jamaica, which possesses within herself immense resources of pasturage, are largely supplied with cattle from the Spanish Main, &c.

numerous evils in the sanitary condition of the island is, I apprehend, to be effected. They must be concurrent in their operation, and be carried out together by the same machinery, and under the direction and control of one general authority. Neither the one nor the other will suffice by itself; by their simultaneous combined action alone, can the important work of substantial and permanent improvement be done. No little time has been lost, money spent, and labour wasted in piecemeal legislation to effect the object in view. Fragmentary and disconnected efforts will not do. The past experience of the island has shown it; for, as yet, no progress has been made in the right direction; nor was there even any foundation laid, until the institution of the Central Board of Health last year. And this cannot be much wondered at by any one, who is acquainted with *the many impediments and drawbacks in the way of efficient and comprehensive legislation upon matters affecting the public health.* Unquestionably, one of the greatest of these arises from *the very nature of the legislative body itself,* and *from the mode of their proceedings.* I beg, therefore, most respectfully to invite your attention to this point; as, in my opinion, it serves to explain in a great measure the failure of various island enactments which at different times have been made with the view of social improvement, such, for example, as the Dispensary Act of 1844, the Registration Act of 1846, the Central Board of Health Acts of 1851 and 1852, &c.

By prescription, the House of Assembly claims and exercises the right of initiating all bills; nor, I believe, has the Council or the Governor (who have a veto upon them subsequently) any official means of even being informed of their contents, until they have been adopted after discussion by the lower house of the Legislature. As there is no member in this house who acts as a representative or exponent of the Executive (the Attorney-General having a seat in the Council), the only means of communication which the Executive has is by message; there is no direct or explanatory intercourse, by which information might be afforded and suggestions be made. Such a legislative machinery is, surely, very anomalous. The result is as might be anticipated. The deliberations of the House of Assembly, too often, proceed upon very insufficient information upon the subjects which engage their attention. Nor can it be reasonably expected that gentlemen, all of whom are engaged in industrial pursuits, can afford to devote the necessary leisure to make themselves thoroughly acquainted with all the details bearing upon, it may be, a new and complex question.* There is, moreover, no salaried Government officer to assist them, and to whose knowledge and experience they can look for counsel and direction. Committees of inquiry are seldom appointed; and when appointed they rarely meet. Members are, not unfrequently, quite ignorant of the provisions of a bill when a vote is taken. All is left to private zeal and individual exertion. With the best intentions imaginable, and the most laudable desire to devise wise measures, it cannot but be that, under such circumstances as these, the labours of the House of Assembly have so often issued in crude and inoperative results. Most of the educated residents seem quite agreed that some modification of the present legislative machinery is greatly needed. It would of course be unbecoming in me to enlarge upon this subject, or to point out the changes which are deemed, by many of the members themselves, to be much needed. My only reason for alluding to it is to express my strong conviction that, for the establishment and efficient working out of sanitary legislation in Jamaica, it is most desirable that Her Majesty's Government should press the adoption of specific measures such as I have suggested, with all urgency, upon the local Legislature. It is the more necessary to do so, inasmuch, as from the impoverished and depressed condition of the colony at the present time, there is naturally a reluctance to entertain the consideration of measures involving any immediate expense and only prospective benefit; while, at the same time, there is so general an outcry for a large immigration of African labourers to supply the place of the victims of the cholera, and thus prevent many more estates from going out of cultivation. That the demand for labour is in almost every part of the island much greater than the creole population, with their present habits, are likely to fulfil is but too patent; and that the colonists have, considering the almost unprecedented severity of the late pestilence, a very strong claim on

* The distance of Spanish Town, the seat of the Legislature, from Kingston, where most of the members reside, gives rise to no little inconvenience in all matters affecting the public service.

the sympathy of the British people, must be admitted by all. But this very state of things appears to me to render the prompt adoption of wise sanitary laws the more urgently necessary, with the view of diminishing the waste of life which is going on continually, and is thus crippling more and more the industrial resources of the island. *If fresh labourers are to be imported, let there be some obligatory provision that they shall be lodged in dwellings suitable for human beings*, and not be left to herd together in filthy dens like brute beasts. What two or three proprietors and managers have already done for their coolie labourers, should be required of all in future, for every labourer committed to their charge.* Otherwise, no amount of fresh immigration, that is ever likely to take place, will supply the gaps which are continually being made by preventible disease. We might as well attempt to keep up the strength of a sick man by merely pouring nourishment into his stomach, without seeking to cure at the same time the canker that is eating into his vitals. Upon this subject the Rev. Mr. Mayhew, rector of Westmoreland, judiciously remarks, "it seems absurd to spend great sums to import emigrants, and not to provide "against an extensive diminution by death for want of a little medicine and "medical aid;" and Dr. Bowerbank of Spanish Town, than whom no one in the island knows better the bearings of the subject, still more emphatically says, "Emigration will only prove a source of greater suffering and difficulty, until "sanitary wants and neglects are corrected and supplied." It is right to add that, in conversing on the subject with many of the managers of estates, they uniformly admitted the necessity of providing better dwellings for the working classes, and expressed their readiness to do in this respect whatever was required, if fresh immigrant labourers were granted to them. Was there no other argument against the indiscriminate and unregulated importation of such persons for the purpose of supplying the present dearth of labour, without the simultaneous adoption and enforcement of sanitary laws, it might be found in the striking circumstance that the epidemic smallpox, now prevailing over the island, is very generally believed to have been somehow connected with the arrival of the Africans on board the "Brandon" (vide p. 82) last year.

It is scarcely necessary to remark that, in the event of wise sanitary laws being enacted by the Legislature, it is indispensable that there should be a responsible governing Board for the carrying out of their provisions, and for the general supervision of the health of the island. Hitherto, most unhappily, there has been the utmost remissness on the part of the magistracy in enforcing obedience to many existing regulations, and there has been great difficulty in obtaining the conviction and punishment of offenders. Nowhere, are the magisterial duties so negligently and inefficiently performed as in Kingston. The general impression, among the respectable part of the community, is that the utmost jobbery and corruption prevail in the corporation of that city; and, to judge of them by their acts, there appears to be too much ground for the charge. Certain it is, that never was a town more disgracefully neglected than the chief town of the chief island of the British West Indies. The contrast, which its general aspect and condition present to the towns in the Spanish and other foreign islands, is very humiliating. It might be advisable that the Central Board of Health should have the power of instituting, through their secretary or other person acting under their authority, and at the public

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* The condition of too many of these poor creatures, who had been induced to go to Jamaica under promises not very faithfully observed, is at the present time often deplorable. This may be judged of from the state in which they are, when admitted into the public hospital at Kingston. I select the following brief notices from recent annual reports of that institution; viz —

In 1847 :—"Several coolies have lately been admitted in a state of great debility from disease and *want of proper food*; and it is feared that the number will be still further augmented."

In 1848 :—"The coolies, when admitted into the hospital, are all *in a state of great wretchedness, emaciated*, and many with foul sloughing ulcers, covered with itch, and their feet filled with chigoes. They are placed in a separate department of the hospital, and are supplied with *appropriate food*, and stimulants when required..... Many of these people applied for admission upon the plea of *destitution*. The rate of mortality among them is to be accounted for by want of stamina in their constitutions, owing in a great measure to their previous privations. The number under treatment during the year was 265, of whom 143 were discharged, 41 died, and 81 remain in the hospital.

In 1849.—"205 coolies were under treatment during the year; 147 were discharged, 26 died, and 32 are now in the hospital. The greater number of these persons, when admitted, are *broken down by privations*; and many of them come in with their limbs in such a state of disease from neglect as to render all remedial means nugatory. Those to whom it was advisable to give a chance of life by amputation, generally speaking, had not sufficient stamina to ensure recoveyr."

expense, prosecutions against corporations and vestries, as well as against private individuals, for the neglect of existing or future laws touching the public health.

To give due efficiency to the Board, I would strongly recommend that one of the medical members should be salaried, to enable him to devote the necessary time for conducting its business, preparing all measures for the consideration of the Legislature, and drawing up the annual report and other memoirs requiring to be issued. Hitherto, these onerous duties have been discharged gratuitously; but, of course, this state of things cannot be expected to continue; and, unless the labour is remunerated in future, it will probably soon be withheld. So inconsiderate was the House of Assembly in re-enacting the Central Board of Health Act, that no provision was made for the payment of the members expenses in travelling between Kingston and Spanish Town.

The *salaried member of the Board might* act as the *General Registrar of Births and Deaths* for the island.

It will be necessary, of course, that *the present Registration Act of the island be repealed, and replaced by one to be rendered efficient by the annexation* of *penalties for neglect or evasion* of *its provisions.* I have already suggested that the district medical officers should be made the local or parochial registrars; they alone could obtain the required information as to the cause of death, &c. The check thereby imposed against neglecting the sick during life, and against the hasty and clandestine burial of the dead, would operate most beneficially on the population generally. Until a proper machinery for registration be established, no reliance can be placed on any census that may be taken. That of 1841 is suspected to be but conjectural.

In conclusion, I would beg to repeat my very strong conviction that no effective amelioration in the sanitary condition of Jamaica will take place, unless a deep and active interest in the matter be manifested by Her Majesty's Government. The colonists, if left to themselves, will do little, and that little badly. On the other hand, no stimulus will act more favourably on their exertions than that of feeling that these exertions are overlooked and directed by the mother country. If such were the case, many errors would be rectified, abuses corrected, and works of social improvement carried out. The remark applies, of course, specially to matters connected with the public health; for it is upon these that all governmental supervision has, as yet, been so thoroughly wanting. In legal and ecclesiastical matters, not only does the Colonial Minister exercise considerable patronage and control, but an appeal on various occasions lies to the courts at home; while there is nothing of the sort on points, the right adjustment of which is quite as intimately associated with the moral improvement and the social welfare of a community, more particularly when that community is in a low state of civilization as in our West India possessions. If there be such a waste of human life continually going on as has been represented in the preceding pages, not to mention the preventible sacrifice of tens of thousands during the late pestilence, does it not become a question of state policy to consider what means should be taken to arrest the evil? This has been done, to a very great extent, in the case of our troops serving there, and with what gratifying results upon the whole I need not say. Why should not a like care be exercised in the case of the civil population? One cause doubtless of the latter having hitherto been entirely neglected is that while, in the case of the military and naval services, there have always been at home special Boards of superintendence and direction, to whom periodic reports of the health of our soldiers and sailors have been regularly sent from every station in the world, and who are thus enabled to devise and carry out suggested measures of improvement, *there has been no machinery whatever for even so much as ascertaining the condition of the mass of the people, in our colonial possessions.*

It is painful to contemplate the waste of life and other ruinous consequences arising from the present state of things, when each colony is left to grope its way for itself, and to pass through the same ordeal of suffering and loss, before measures are adopted to preserve the health and save the lives of its people. Let it be remembered that what cholera and smallpox have done in Jamaica during the last two years may, ere long, be repeated in some other of our colonies, either in the eastern or the western hemisphere. That other islands in the West Indies and other places on the Spanish Main will soon be visited by the Cholera, I quite expect to hear. It has indeed been the consideration of this not unlikely occurrence that has led me to enter, with so much minute-

ness, into all the details connected with the history of the epidemic recorded in this report, in the hope that the information may not be without some practical use. Nor am I without fear that Jamaica herself may again, before many years are over, experience the breath of the pestilence;—the neighbouring island of Cuba has suffered repeatedly from its invasion. Should this unhappily occur, the second visitation may be even worse than the first, if nothing be done in the meantime towards mitigating its severity. Such has been, it is certain, the case in other lands, which have been made to feel that neglected providential judgments are generally followed by others still more disastrous; and no one, who is acquainted with the state in which the cholera has left Jamaica, can be without the greatest apprehension of the consequences of any malignant disease again spreading over the island. Who, moreover, can doubt that much of the depression and impoverishment which prevailed prior to the destructive epidemic, not to mention the ravages which it committed, may be fairly traceable to the physical condition of the masses of the people, and to the habits and temperament consequent thereon? If other argument was needed to awaken public attention to the sanitary welfare of our colonies, it might be found in the enormous expenses which have fallen upon the mother country, as well as upon the colonies themselves, from the neglect hitherto paid to this subject. The expenses attendant upon the emigrant fever in Canada in 1847 were, I believe, above two hundred thousand pounds; and I need scarcely say that a large proportion of the annual expenditure for the military service, at different stations, has often been owing to sickness,—much of which might be prevented,—among the troops.

It appears to me that many important advantages would result, if each colony was required to transmit to the colonial office reports on the state of the public health and on the sanitary condition of the people, at regular intervals of time. By this simple expedient, an immense amount of most instructive information would be obtained, which could not fail to be of inestimable value alike to the mother country and to her numerous dependencies.

It is very desirable that all official documents bearing upon public health, and presented to Parliament, should be more circulated and be better known in the colonies than I have reason to believe that they are. Had the Reports of the General Board of Health been generally known in Jamaica before the outbreak of the cholera, many errors would have been avoided.

I have, &c.

(Signed) GAVIN MILROY.

APPENDIX.

APPENDIX (A.)

A MESSAGE from his Excellency the Governor, enclosing Copy of a Letter addressed to his Excellency by Dr. Gavin Milroy, one of the Medical Inspectors recently sent out by Her Majesty's Government to the West Indies.

[Sent down to the Honourable House of Assembly, April 22, 1851.]

" Mr. Speaker.

" I am commanded by his Excellency the Governor to lay before this Honourable " House a copy of a report which has been made in the form of a letter addressed to his " Excellency by Dr. Gavin Milroy, one of the medical inspectors recently sent out by " Her Majesty's Government to the West Indies, as the result of his observations during " a tour of inspection through the island of Jamaica."

(Copy.)

Sir, Kingston, March 31, 1851.

Having completed the tour of inspection round the island, according to the route which your Excellency was pleased to recommend, it now becomes my duty to submit to your consideration the general results of my observations and inquiries, more especially in reference to the causes which have, in my opinion, mainly contributed to render the visitation of cholera so virulent and fatal in Jamaica; and at the same time to suggest such measures as seem to me best suited to prevent, under the Divine blessing, the recurrence of a like disaster, and to ameliorate the general sanitary condition of the country.

It does not belong to my present communication to give any account of the mode of the introduction, or of the circumstances connected with the earliest manifestation, of the pestilence in the island, nor to trace its progress from where it first appeared to other places, as I have not yet commenced the inspection of Port Royal, Kingston, or Spanish Town.

The cholera has exhibited in Jamaica exactly the same leading characters, which it has displayed in the different countries of Asia and Europe which it has visited; not only the same symptoms, and the same terrible virulence when unopposed in its early or premonitory stage, but also the same preference for certain sorts of localities and dwellings, and a like excessive fatality in such localities and dwellings, while others, which are differently situated or conditioned, have nearly or altogether escaped.

Whatever obscurity may hang over the primary cause of the disease, and however little we are acquainted with the laws which regulate its diffusion or migratory course, whether upon a great or a more limited scale, universal experience has most clearly made known,—and it is this which concerns us most, and which should mainly engage our attention,—that, whenever the choleraic poison is abroad in the atmosphere of a district, there are certain local causes or conditions which will inevitably favour its development, and give activity and force to its operation. It is on a right appreciation of the influence of these local circumstances, with a view to their correction or removal, in conjunction with the provision of proper medical assistance to the mass of the people when attacked, that any reasonable hope can be entertained of greatly lessening the ravages or arresting the progress of a disease like cholera.

By far the most potent of the favouring causes is *an impure or contaminated state of the atmosphere* which is breathed. The contamination may proceed from one of two sources:—1. Either from the admixture of the effluvia arising from decomposing animal and vegetable matters, whether the decomposition be attended with any offensive smell or not; 2. Or from the very changes which the respiration of living beings is continually effecting in the air around them, and which necessitates its constant renewal for the support of life. It is of importance that this twofold source of atmospheric impurity be steadily kept in view, in all inquiries respecting the outbreak and spread of epidemic diseases. Both causes are very often, nay generally, associated together in full force in the dwellings of the poor; but in public institutions, such as prisons, lunatic asylums, &c., the action of one is usually predominant. The overcrowding in such places, and the utter want of proper ventilation, too clearly shows how little attention has usually been paid to one of the most important points in the preservation of public health.

The general result of my observations in the towns and villages in Jamaica, which I have visited, with respect to the influence of putrescent effluvia in localising the cholera, and in aggravating its virulence, is entirely in accordance with the large mass of evidence on the subject contained in the report of the General Board of Health in England, a good many copies of which I have circulated among the medical practitioners in different parts of the island, and from the general knowledge of whose contents much advantage may be anticipated. Without citing any particular instances, I may remark that the main stress of the disease has almost invariably fallen upon those spots or localities which are the most filthy and neglected, and where most nuisances exist. In a hot climate, where the process of decomposition is much more rapid, and the amount of decaying matter is much greater

than in a temperate one, the effects are proportionately more mischievous and extensive. And yet every town and village in Jamaica teems with nuisances of the very worst description; indeed, there is scarcely a house without some accumulation of noxious matter about it. That the continuance of such abuses has proceeded from negligence and inaction, rather than from any ignorance of their pernicious effects, would appear from the circumstance that the very first act which the Local Board of Health in each parish set about doing, on the apprehended approach of the cholera, was to order an immediate cleansing of streets and dwellings, the removal of filth wherever it was found, the destruction of hogs, and so forth; and so great was the need for such a step, that the remark has been made to me everywhere, that no one had had any conception of the amount of abominations of all sorts which had been allowed to accumulate around them for a multitude of years.

It is a very significant fact that, in the great majority of instances, the first cases of cholera in a town have appeared in its filthiest and most neglected parts, which are very generally the most insalubrious at all times. The very spot, where the disease would manifest itself, had often been indicated by the resident medical men before the pestilence had reached their neighbourhood; and the prediction has been usually verified by the result. It is perhaps scarcely necessary to remark here, that however great may be the influence of the effluvia from filth and decaying refuse in attracting and localising the choleraic poison, it is never for a moment presumed that it is *generated* by, or that it *originates* from, such a source. The worst pollutions may exist for ages in a town without their giving rise to epidemic cholera; but should the poison cloud reach that town, it will almost inevitably settle down on those spots where the atmosphere is most contaminated. Cholera is the most unerring inquisitor, as well as the most fearful avenger, of sanitary neglect.

That the cleansings and purifications, which were more or less efficiently carried out in most places, contributed to mitigate in some degree the force of the epidemic, cannot be doubted; but they had been delayed far too long; and in too many instances the evils were of such magnitude and extent that nothing really effectual could be accomplished in a short space of time, and without much more summary and stringent powers than the Local Board of Health possessed.

It should be ever borne in mind that the very same precautionary measures of cleansing and removing of nuisances, recognized by all to be so imperatively required on the threatened invasion, and during the prevalence of cholera, are quite as necessary at all times for the prevention of disease, as well as for the preservation of the public health, and more especially whenever any epidemic febrile disorders, whether endemic or only occasional, are present in the country. The course and issue of all fevers, not to speak of other maladies, are as much influenced by an impure condition of the air that is breathed as cholera is known to be; the only difference being that the poison of the former acts more slowly, while the latter does its deadly work in a few hours.

As a general remark, the cholera has raged with the greatest fury in those localities and districts which are in ordinary seasons the most insalubrious, and which are the favourite *habitats* of the endemic fevers of the country. In the neighbourhood of a filthy swamp or morass, charged with organic matter in a state of decay, or of a foul stagnant pond or river, into which the refuse of human habitations has been thrown, the mortality has generally been frightful. *Port Maria* affords a melancholy illustration in point. There, the mortality exceeded that in any other town in the island, although still very much below what took place on certain estates. Between one half and two thirds of the inhabitants died in three or four weeks, and an eighteenth part of the entire population was swept off within twenty-four hours,—a rate of mortality which in Kingston would have amounted to two thousand!

The other source of atmospheric impurity mentioned above, as proceeding from the breathing of a multitude of people in confined, ill-ventilated apartments, now calls for notice; and, as this is a subject on which most unprofessional persons have very indistinct and inaccurate ideas, it may not be inappropriate to make a few preliminary remarks. Every act of respiration vitiates the air that is taken into and expelled from the lungs, and that portion of air cannot be breathed again with impunity; for it now has not only lost much of its vitalizing element, but it also contains a deleterious gas which in small quantities acts as a slow poison to the system, and in a larger dose speedily extinguishes life. For the due maintenance of health, therefore, there must be a constant renewal of the air that is respired; otherwise the blood circulating through every part of the body cannot be properly vivified, and the natural vigour of the system will be lowered, while a tendency to disease and an inability to resist its assaults are proportionately induced.

But it is not from the chemical changes only, resulting from respiration, that the impurity of the air in crowded, ill-ventilated apartments proceeds. There is continually being given off from the lungs and skin of living beings a quantity of watery vapour, holding in solution an animal matter of a highly putrescent nature, and which is the cause of the exceedingly nauseous smell experienced upon entering a close room, where a number of persons have been sleeping over night. It clings not only to the clothes of the inmates, but to the very furniture and walls. There is reason to believe that the absorption of this excrementitious matter back into the system is apt to give rise to the most dangerous maladies. At all events, medical men are universally agreed that no condition of the atmosphere is so liable to favour the development of all epidemic diseases in their malig-

nant form, as well as to promote their diffusion and propagation among those who are exposed to their influence, as that referred to.

It is an important point to determine what amount of breathing space is necessary when a person or persons are confined together for a number of hours, as during the act of sleeping. In the cool climate of England, a space of between 500 to 600 cubic feet at least, for each person, is deemed absolutely requisite for health in ordinary seasons; during the prevalence of epidemic disease this is scarcely sufficient, unless great attention be paid to maintain a free circulation of air through the chamber. In recently constructed prisons 1,000 cubic feet are allowed to each inmate; and it is an instructive fact that most of these buildings at home escaped the visitation of the cholera, although in many instances it was raging all around them, while, on the other hand, the most terrible ravages took place in other public institutions where the inmates were unduly crowded in badly ventilated dormitories. Now, nowhere are the evils of this state of things carried to a greater extent than in the *dwellings of the negroes*. Their whole condition is usually wretched in the extreme. Generally situated in the very worst localities, squatted down upon the bare earth, without, in most instances, even a few boards for a flooring, choked with rank vegetation close up to the very door, and almost always surrounded with filth and refuse, little is the wonder that the pestilence committed such devastation among the occupants. But the internal accommodation of these hovels is even worse, in a sanitary point of view, than their external condition and accompaniments. Into a room of eight or nine feet square as many as six, eight, or ten persons are often crowded at night, without the least regard to either age or sex, and most of them lie in a state of semi-nudity on the ground. The negroes, it is well known, have a great dislike to cool air, and they therefore most diligently exclude its introduction by shutting both the windows and doors of their sleeping places; probably, this is the reason too of the thatch being often made to hang down over the walls within a couple of feet from the earth. The state of the air in such a place at night,—the very time, be it remembered, when the choleraic poison is most active, and when the vast majority of seizures occurs,—is so nauseously close and oppressive that a visitor can with difficulty remain in it for even a few minutes. It is obvious that no mere elevation or other natural advantage of situation can compensate for, or in any way prevent, this atmospheric pollution *within* the dwellings; the purest mountain air becomes converted into little better than a putrescent vapour.

Still more wretched than the ordinary negro houses are the huts which are provided in some places for occasional or stray labourers, and far too generally for the use of the watchmen, consisting of a few bamboo rods stuck into the ground in this form, A, with some thatch thrown rudely over them. Often have the poor occupants been found lifeless in the morning, having died during the night without any one near them. Is it not an outrage upon our common nature to require human beings to occupy such kennels?

The pernicious effect of the stifling atmosphere in the negro houses is aggravated by its inevitable *dampness*, in wet weather. Their very position, on the bare ground, must make it so; and as there is never any gutter provided to carry off the rain, this of course soaks into the earth all round the wattled walls, and not a little finds its way into the interior, independently of what penetrates the roof which, if thatched, as it generally is, becomes of course like a wet sponge.

That moisture has much to do in favouring the development of choleraic disease is shown by its having, in all countries, generally followed the course of rivers, and being most severe near ponds, lagoons, or in deep narrow valleys or ravines, where there is always much humidity while there is a deficient circulation of air, and which, in tropical countries more especially, are notorious for their rank vegetation. Yet it is in such localities that most of the negro villages or settlements here are located.

The circumstances too of the invasion of Jamaica by the cholera having been preceded by an unusually wet season (not to mention other meteorological peculiarities), and of the frequency and virulence of its attacks being, in almost every place of the island, observed to be greater after the fall of rain, indicate the marked influence of moisture as a predisposing cause.

And here I cannot but express my opinion that there is much in the climate and natural condition of Jamaica, which may well give the physician grounds for apprehension that cholera may indigenise itself in the land. There are certainly many points of resemblance and features in common with those parts of the East Indies, where the disease is seldom long absent. The very lingering too of the pestilence at the present moment in some places, and its re-appearance in others which had been supposed to be exempt, cannot have escaped the notice of any one; to the medical man more particularly, they are full of significance. I am the more anxious to awaken public attention to the necessity of measures being adopted for the preservation of the public health, as I find that an idea is very generally prevalent that there is little or no risk now of the yellow fever ever re-appearing with virulence in the island, in consequence of its absence in the epidemic malignant form for so many years past. The idea is utterly erroneous, and may, if uncorrected, prove fatally mischievous. I shall only remark that the recent severe outbreak of the pestilence in Brazil, a country which had been for a couple of centuries exempt from the invasion, and its existence at the present moment in Cayenne, and also, I believe, in Demerara, are acts which should not be overlooked.

There are other causes, besides those already mentioned, which have tended to render the cholera so fatally severe among the negro population. The insufficiency or want of *proper clothing* at all times, and more particularly at night, on the one hand, and on the other the character of *their food*, and their habit of taking their principal meal, consisting usually of salt and often rancid fish, with an enormous quantity of yams and hard indigestible vegetables late in the evening, cannot but have had a most injurious effect.

That the agency of the various physical causes, which have been enumerated, has had very much to do with the excessive mortality among the negroes is proved by the striking fact of the comparative, and in many places the almost total, exemption of the better conditioned classes, who had the advantage of living in clean, well-ventilated dwellings, and of being properly fed and clothed. Not only was the relative number of attacks much less among these persons, but the proportion of recoveries in even bad cases was very considerably higher than among those living in filthy and overcrowded abodes. Do not these facts alone testify how much may be done by judicious sanitary measures to mitigate the force of the epidemic?

But it is not to the neglect of these measures alone that the dreadful loss of life, from the recent visitation, is to be attributed; it has in a very great measure been owing to *the utter want of adequate medical aid in every part of the island.* While cholera is, from the swiftness of its destroying power, the most terrible of all pestilences when it bursts forth like a thunder cloud upon a place reeking with impurity, and while it is the most intractable of all epidemic diseases in its developed stage, it is not the less true that not only is its approach to a district very generally heralded by warnings appreciable by the wise physician, but also that, in the vast majority of cases, the invasion of the disease in its malignant form is ushered in by certain premonitory symptoms which are very controllable by the judicious use of remedies. One great object therefore is to catch up, so to speak, the disease in this incipient stage, and to bring and keep it under medical treatment until all tendency to sickness has passed away. An immense amount of benefit and saving of life may be effected by a well-organized system, whereby relief may be promptly obtained in the early stage of the attack. Wherever this has been carried out with activity, the most satisfactory results have followed, even in the hands of unprofessional persons, when acting under the direction of a medical adviser; otherwise much mischief is very apt to be done.

It is altogether painful to think of the sacrifice of human life that has taken place in almost every parish of this island, without so much as an effort having been made by competent skill to relieve the sufferings of the sick, or to arrest the course of the wasting pestilence. Thousands upon thousands have died unseen and unprescribed for by any medical man; indeed an immense majority of the deaths, probably four fifths of the whole, have occurred under such circumstances. And how could it be otherwise? An entire parish, with fourteen thousand inhabitants and of between fifteen and twenty miles in extent, was left to the charge of one gentleman, and this too during the raging of a mortal epidemic! Many districts were without any professional assistance whatever; while in others the aid of irregular practitioners was resorted to by Local Boards of Health, from their inability to procure the services of properly qualified men.

The state of the island in respect of its means of medical relief for the mass of the people is at present, and has been for some years past, most deplorable; and, unless some remedy be devised by the Legislature, things must inevitably become worse. By no class or section of the community have the social changes, which followed upon the Emancipation Act, been more severely felt or pressed more heavily than on the medical practitioners. The causes are well known to every one. Men of education have been compelled either to abandon the profession altogether, or to associate its practices with the pursuits of ordinary barter; and what has been the result? On the one hand an almost utter destitution, most dangerous to public welfare, of medical relief in most parts of the country; and on the other the gradual decline of that moral and humanizing influence which the exercise of a beneficent calling, like that of medicine, always has upon the lower classes, while the very worst forms too of mischievous imposture and superstitious charlatanry are rapidly on the increase.

I would therefore most earnestly express my hope that the subject may engage the serious attention of your Excellency, and that the Legislature of the island may, without delay, enact some wise measures to remedy so alarming a state of things.

Before submitting to your Excellency's consideration a sketch of the plan which has occurred to me as the most advisable for providing medical relief to the labouring classes, and for laying a right basis for the sanitary amelioration of the country, there is a topic, intimately connected with these two departments of public health, on which I wish to make a few remarks.

The true foundation of all permanent and successful sanitary legislation must rest upon an accurate knowledge of the amount of the mortality, which is going on at all times in seasons of ordinary as of extraordinary sickliness, and of the diseases and casualties which occasion the mortality. It is obvious that to obtain such information can only be effected by means of a systematic registration of deaths, obligatory on all. Many and most important benefits would accrue from a measure of this sort being carried out for a succession of years. It would indicate the relative healthiness or unhealthiness of different parishes

and districts; and, by drawing public attention to the condition of certain localities in towns and villages with respect to their salubrity or otherwise, it would become the means of ascertaining the existence of causes which are injurious to health, and of effecting their correction or removal. It would thus be a valuable auxiliary, as well as a directress, of sanitary improvement.

A correct registration of deaths and of the causes of death has been found to afford an important check to the culpable neglect of the sick, and even to the commission of atrocious crimes. The mere knowledge that an account must be given of the circumstances attending the decease will alone serve to prevent much mischief.

From a variety of facts which have come under my notice, I am strongly impressed with the idea that *at all times* a considerable waste of life is going on among the lower classes of this island, more particularly during infancy and early childhood. Accurate data upon the subject are not to be had; at least, all my attempts to obtain trustworthy information have been nugatory. I have found, however, an almost concurrent conviction among the most intelligent persons in every place, which I have visited, that there is a large amount of mortality among the young of the negro population.

As an accessory advantage of having a correct tabulated registration of deaths, the important subject of life assurance would be greatly aided, and the benefits thereof be probably much extended by the information thus obtained.

A registration of births should, of course, be combined with any properly devised scheme of mortuary registration.

The public utility of a registration of deaths having been already recognized by the Legislature of the island, it now only remains to carry out into efficient operation the intentions of the Act passed in 1844, but which, from not being made compulsory, has proved quite valueless, while considerable expense has been necessarily incurred.

To remedy the various evils and defects touching the health of the mass of the people, enumerated in the preceding pages, the plan which, after the best consideration I can give to the large amount of evidence brought before me, and to my personal observation of the existing state of things, appears to me most practicable, and most likely to be extensively useful, is as follows:—

That a *medical officer* be appointed by the Executive to the superintendence and care of each parish, his primary and principal duty being to afford medical assistance and medicines to all of the labouring population as shall apply to him at any time for such relief. The poorer classes are to have a claim upon his professional services, and a right to require them in all cases of sickness or accident. To enable the medical officer to maintain a supervision of his entire parish, and to afford, as far as possible, relief in every district, it will of course be necessary that he should be provided with *two, three, or more assistants*, according to the extent of the parish and the amount of its population, to be located at suitable distances from each other, and each having the charge of a dispensary or depôt for giving medical advice and medicines in all cases of less serious sickness. These assistants should be young medical men, duly qualified by having received their diploma from a college of recognized reputation; and none but such should be permitted to be engaged. It is of the utmost consequence that this rule be steadily adhered to; the object being not only to afford the means of the best professional assistance to the working classes during illness, but also *to train up and establish in the island a staff of well educated men*, who shall be qualified to take the place of their superiors in the event of their withdrawal, and be ready to act in such a terrible emergency as that through which the country has just been made to pass. Had such machinery for medical relief been in existence during the last six months, what amount of human life might have been saved, and what disastrous consequences, the full extent of which will not be known for the next year or two, might have been prevented! The only true security of a people against the invasion of a pestilence, as against the assaults of a hostile force, is to be always prepared; in neither case, can very efficient means of resistance be extemporized.

Besides the cholera there are other epidemic diseases little less destructive, from which Jamaica is liable to suffer; and I would take this opportunity of remarking, that it is in vain to trust to any mere mechanical means of exclusion, when such diseases approach a country. The danger of their fatal outbreak is from within, much more than from without; for, if their poison germs do not meet with a *nidus* suitable for their development, they will either cease to exist, or their operation will be comparatively innocuous. But as the whole subject of the quarantine laws and practice of the island will shortly engage my attention I shall not say more upon it at present; merely observing that "sanitary measures, not sanitary cordons or quarantines, constitute the safety of a people" on the threatened invasion of a pestilence.

Among the duties of the parochial medical officer will be that of establishing and carrying out a system of effective *vaccination*. From inquiries made during my journey, I am led to believe that a very small proportion indeed of the people have been vaccinated. In most districts the practice has been nearly discontinued for many years, and where it has been attempted, the results have been far from being satisfactory. If small-pox were to break out among a population so unprotected, and whose habits of life, as already described, are so favourable to its diffusion, the ravages might be dreadful; nor can I but think that a heavy responsibility will rest upon the authorities of the island if

so serious a risk shall be allowed to continue, without immediate steps being taken to obviate it.

The medical officer should, of course, be required to keep *an accurate register of all vaccinations*, with the circumstances of age, sex, residence, &c., and of the results of the operation, whether successful or not.

But there are other associated duties, only secondary in importance to that of affording relief in sickness, which may be most advantageously committed to the medical officer. He should be the general *sanitary inspector* of his parish, and be required personally to examine into and ascertain the state of the public health therein, and the influence of external circumstances and local conditions upon it. The sanitary state of towns and villages, more especially in reference to the structure and faulty arrangements of dwellings, and the existence of nuisances, or of whatever is injurious to health and liable to engender or aggravate disease, will demand his special attention.

Many of the *prisons* in the island are in a most faulty and even scandalous condition, their arrangements being as reprehensible on the score of health as they are on that of decency and morality. Still more disgraceful is the state of the only *leper houses* or *yaw huts*, which I have yet had an opportunity of inspecting; it is an utter reproach to a civilized country that such an enormity should exist.

Among other flagrant abuses, I may mention the revolting practice of burying the dead in the plots or gardens round dwellings, and not unfrequently within a few yards of their very door. Even in the very precincts of some towns, this is going on at the present day; and horrible instances of depravity in connexion with the practice are well known to have occurred, in many districts, during the prevalence of the cholera.

It will of course be necessary that there should be *Local Boards of Health*, invested by law with due authority to carry into effect, under the superintendence of the medical officer, such sanitary regulations as may be enacted.

Independently, however, of the aid of compulsory enactments, a large amount of public benefit would accrue from the recommendatory and persuasive efforts of a recognized officer of health. By the local knowledge he would gain in his inquiries and examinations, and having his own attention specially drawn to the subject, he would be enabled to afford much useful information to all classes, and to suggest many simple and salutary improvements. A mere hint from a person well acquainted with sanitary science might often prevent lengthened sickness and distress; and there is too much reason to believe that in every parish of the island there are hundreds of cases of confirmed, if not of incurable disease, attributable solely to neglect in their early stage. On the ground of economy alone, preventive measures are much to be preferred to curative or remedial ones. But there are other and higher motives to influence our views upon this subject. No set of men have a greater, or probably so great, an influence on the habits of the poor as medical men; they understand their character and know their wants, whether inevitable or self-induced, better than others; and it is this very knowledge, which fits them to be, in the hands of a wise and liberal government, the most useful pioneers in the great work of social improvement. Medical men form the best link between the higher and lower classes, and especially in a country like this where there is a difference of race as well as of condition. The very nature of their calling tends to connect all grades of society together, for none is exempt from sickness, and none can do well without the physician's aid. Moreover, it has hitherto been far too much overlooked that the results of *educational efforts are* intimately connected with, and indeed dependent upon, the amelioration of the physical condition of the working classes; and probably the want of success, which has hitherto attended the labours of the missionary and teacher—for it appears to be a universal conviction that the intellectual and moral condition of the negro population has anything but advanced of late years—is not a little owing to the wretched condition of the *homes of the people*. As long as these continue as most of them are at present, education will make, I fear, but small progress; the daily and hourly influence of debased domestic habits will more than neutralize the exertions of the instructionist, whether secular or religious.

Besides the duties already enumerated, it appears to me that the medical officers might act, with the utmost advantage to the public good, as the *superintending registrars of births and deaths* in their respective parishes. In carrying out any future *census* of the population, the correct determination of which, at stated periods of time, is highly desirable, the assistance of these gentlemen would be of great value. It is also well worthy of consideration whether the medico-legal duties of the *coronership* would not be more efficiently performed, if they were always committed to the charge of a person whose education necessitates an accurate knowledge of the phenomena of death from natural or violent causes.

To ensure the faithful and efficient performance of the various duties thus proposed to be devolved upon the medical officers, I would suggest that they should be called upon to draw up an *annual report of the state of their respective parishes in reference to public health*, giving accurate returns of the total and relative mortality in different districts, with remarks on the probable causes of difference in this respect, describing the chief sources of insalubrity which exist, the effects of local agencies in producing or aggravating disease, suggestions for their removal or correction, the nature and results of alterations already made, and the improvements that are most required to be done,

&c. &c. A large amount of very valuable information on vital statistics, health-topography, and other important matters would thus be obtained; and in order to make it generally accessible, the reports should be addressed to the governor of the island, and copies laid on the table of the Legislative Chambers with the view of being printed.

As the manifold and very onerous duties of a medical officer could be discharged with profit to the public only by men of high professional attainments, it is obvious that their remunertion should be generous and ample, not liable to fluctuation or uncertainty, nor contingent upon casual circumstances. The salary of the assistants will, of course, be much smaller.

I trust that I shall not be considered presumptuous, or transgressing the sphere of my mission, if I venture to offer a remark or two on the source of public revenue from which, as it appears to me, the expenses necessarily incident upon any plan of effective medical relief and sanitary improvement might be most reasonably derived. While all classes of the community will be benefited by a scheme like that which I have proposed, its advantages will be mainly and peculiarly conferred upon the labouring population.

It seems but fair, therefore, that all should be called upon to contribute to carry out the important object in view; and I presume that this can only be done by an assessment which shall reach, as far as possible, every class and grade in the community, from the highest to the lowest. If it be desirable that the labouring people should feel that they have *a claim to medical relief* for themselves and families in time of sickness, that it is not a boon of charity doled out to them, but a right to which they are entitled, then the course appears to me to be clear,—the right which is claimed implies the performance of a duty that has been discharged. The habitual exercise of such a feeling will moreover not be without some effect in gradually accustoming the mind of the negro to take juster views of the reciprocal obligations and privileges of civilized life. For these reasons, *direct* seems very preferable to *indirect* taxation for the carrying out of such a measure as that of medical relief.

But whatever view may be taken of the financial bearings of the question, I am confident that all will concur with me as to the urgent necessity of a large and comprehensive scheme being promptly adopted by the Legislature for the preservation of human life, and for preventing the recurrence of those disastrous results from which the industrial prosperity of Jamaica is suffering so severely, at the present moment. And let it be remembered that the universal demand for a great increase of population to carry on the agricultural labours of the island, and the prospect which there is of a considerable immigration from different countries, render it only the more imperative that steps be now taken to obviate the extension and aggravation of existing evils.

In conclusion, I would express my fervent hope that the heavy calamity with which it has pleased Almighty God to afflict this land may, by His good Providence, be made the occasion of lasting benefit to its best interests, in the amelioration of the physical and moral condition of the people, and in thus laying the only sure foundation for their progressive welfare and prosperity.

I have, &c.

(Signed) GAVIN MILROY, M.D.,
Medical Inspector.

APPENDIX (B.)

Case of Spasmodic Cholera at Port Royal in November 1832.

The history of this case is related in the Jamaica Physical Journal by Mr. Morales. The patient was a negro lad 13 years of age. He was seized with vomiting and purging about 4 o'clock A.M., having retired to bed the night before quite well. The "purging was of pure water." When Mr. Morales first saw him early in the morning, he found him "perfectly cold from the neck to the toes, with profuse sweats running from him, his "countenance pale and cadaverous, eyes glassy and sunken, lips slightly livid, voice "scarcely audible, respiration much quickened and taken with difficulty. The pulse at "the wrist was just perceptible, although not sufficiently so to be counted, but excessively "rapid; the thirst very great, and tongue brown and clammy. What he had vomited "just before my seeing him was perfectly liquid, and of a light greyish colour, with "white specks resembling particles of flour floating on the surface. The stools were quite "watery, and free from all disagreeable smell and fæcal matter. The *recti* abdominal "muscles were so contracted as to resemble to the feel two large balls." An hour or two later, "no pulsation to be felt at either the radial or carotid arteries; the vomiting "extremely distressing, purging incessant, and accompanied with constant drawing up of "the legs; the recti abdominal muscles much more contracted, and apparently twisted "inwards." Two hours later, "all the symptoms much the same, but the general collapse "greatly increased, and the countenance more haggard and sunken." He died at 7 P.M. Dr. Linton, the principal medical officer of the naval hospital at Port Royal, who saw the patient along with Mr. Morales said, that "had there been present more lividness of the "countenance and hands, he should not hesitate pronouncing this as perfect a case of "Asiatic cholera as any he had ever witnessed in India."

There was no post mortem examination of the body.

When Mr. Morales attended the case, he was led to believe that the boy had on the previous day eaten only his usual food, viz., some common soup with yam in it; but he afterwards discovered that his patient had eaten freely not only of the wild cocoa nuts (a very hard and indigestible fruit), but also of the sea-grape (coccolaba), both green and ripe. With the exception of this single case, I could not ascertain that any medical practitioner in the island had ever met with a fatal case of occasional cholera, accompanied with the characteristic symptoms of the pestilential disease. Instances of extreme severity had, now and then, occurred in the practice of some of these gentlemen. Thus Dr. Magrath attended in 1822, at Black River (a swampy locality), a young lady in whom watery discharges, shrunk countenance, incessant thirst, coldness of the breath, vox cholerica, and a soaked shrivelled skin were well marked. The only symptom wanting, Dr. Mc. said, was the blueness of the surface. The patient recovered.

He did not meet with a similar case until the year 1848, when he was called to see a boy in whom all the above symptoms had come on after exposure to wet and eating a large quantity of unripe fruit.

Dr. Mason, of Savanna-la-Mar, stated that he had occasionally seen cases in which every symptom, except the peculiar change in the colour of the skin, of the malignant disease was present, and which would certainly be regarded as such in the present season; but they all recovered.

Dr. Bowerbank attended in Spanish Town, in 1840, a young officer who was seized with violent vomiting, purging, and cramps soon after drinking a large quantity of fermented liquor when he was excessively heated from exercise. The case proved fatal.

APPENDIX (C.)

To his Honour the Mayor of Kingston.

Board of Health,

Sir, Kingston, 24th November 1849.

The cholera having again appeared in England and other countries of Europe, and having taken a similar course in its progress from the East to that which it followed on its last invasion of those countries, there is every reason to believe that in the remainder of its destined course it will be governed by the same laws as before, and that after a fixed period it will be observed making its way to this part of the world, and may appear in this island.

By the blessing of God this country escaped from the last epidemic, whilst we saw it sweep over a large space of the American continent, and, still nearer to us, over a portion of the neighbouring island of Cuba. By a slight deviation even from its former path it would pass over this island, and unquestionably it would pass with its usual destructive energy. The condition of this city, and its large population, mark it as one of the places where it would probably discharge one of the severe shocks which, from time to time, have been observed to signalize its course. The question then arises, what is to be done in our defence?

After a careful and laborious examination of all the evidence which could be obtained on the subject, the sanitary commissioners of England have declared officially their conviction that the cholera spreads itself entirely independent of contagion. This Board have come to the same conclusion; and they have no hope, therefore, of being able to prevent its entrance into this city by any measures of quarantine which can be taken, though they have not neglected to avail themselves of such as prudence, rather than science, suggests. The measures which the occasion demands are of a different character, founded on correct observation and of undoubted utility, not calculated nor pretending to raise a barrier against the entrance of an irresistible power, but meeting it, and subduing its violence and its strength by withdrawing the material on which it feeds and grows, and increases its destructive activity. All observation proves that cholera, spreading as it now is in those countries usually exempt from it, seizes upon the masses of population in towns, and not only first but with greater violence on that portion of the towns where the population is densest, the buildings most crowded together, the ventilation obstructed, and the air infected. There also, it lingers after it has passed away from the more open streets and dwellings. Whether the bodies of those living in the crowded and badly ventilated districts of large towns, being unsound from habitually breathing a vitiated air, become an easier prey, or whether the cholera poison, by combining with or being otherwise acted upon by matter contained in that air, has its energy increased, may not be easily determined; but the fact is as clear as day that from the accumulation and decomposition of organic matter, and the stagnation of the products, and their consequent concentration in the air, in such places the mortality from cholera becomes greatly augmented.

Deeply impressed with the truth and importance of these views, the Board are desirous to urge them earnestly upon your Honour, with the hope that practical measures founded upon them may immediately engage the attention of yourself and the city authorities.

The streets of Kingston are wide and spacious, and even the lanes are not very narrow, so that generally speaking they are tolerably ventilated. But much as ventilation can effect, it cannot keep the air of this place pure and healthy. The excretions of 40,000 human beings, the accumulation of scraps of animal and vegetable matter thrown into the streets, the filth arising from innumerable hogs and dogs and other animals ranging

at their pleasure all over the town by night and by day, are all more or less exposed to the open atmosphere, and mingle their exhalations with all the air we breathe. The streets themselves have, for some time past, been repaired by laying upon them thick layers of stable manure and other filth, and covering all over with a thin layer of sand. All this mass of matter lies rotting under a tropical sun, and constantly sending forth those exhalations which give power to the poison of cholera, wherever both have been observed to come together. There is not a sewer in the town to cover in or carry away a single particle of this deleterious matter; the streets are never swept; even a putrifying carcass owes its removal to the vultures. Any cleansing which we have is to be attributed to the pure sea-breeze, which for a portion of the day disperses the offensive exhalations, or to a torrent of rain which occasionally sweeps away into the sea the filth which lies on the surface of the streets; and were it not for these blessings of Heaven, giving us partial relief, the nuisance to our senses from the mass of corruption within this city would long ago have forced more cleanliness upon us, in spite of our disregard of all sanitary considerations. A large town in such a state is not prepared to meet an epidemic of any kind, and least of all an epidemic of cholera; but it may yet be placed in a much safer condition. The preparation which the Board have to recommend is all expressed in the general term of cleanliness, and no one will venture to deny that the attainment of this is within the reach of the city authorities. The two great means, sewers and water, by which a large town can be kept clean, are at present wanting in Kingston; but even without these much may be done. The streets and lanes may be swept daily, and the sweepings carefully removed. The manure deposited in the broken-up streets may be taken away, and the law strictly enforced against all who may persevere in depositing improper materials in such places. The more crowded parts of the town should have especial attention. The so-called negro yards should be regularly and carefully inspected, and the parties occupying them required to keep them clean. The poor should be assisted in freeing their yards and hovels from any filth or rubbish which may have accumulated in them or around them, and labourers and carts provided for this purpose when necessary. All privies and cesspools, and more especially those at the public hospital and at the barracks, should be carefully inspected, and as much as possible purified. This may be done by throwing quick-lime into them, but much better by chloride of lime, or the newly discovered more powerful disinfectants, such as the chloride of zinc of Sir William Burnett. Besides the efficient use of *disinfectants*, the freest possible ventilation should be given to all very offensive privies and cesspools.

An inspector for the time and occasion, a man of good sense, temper, and sufficient firmness, should be employed to carry out these recommendations, and the Board would be glad to give him at all times any aid in their power. In the meantime, the Board have further to recommend to the authorities to be *prepared* to establish a cholera hospital, that as little time as possible may be lost, if unfortunately we shall have to deal with this deadly epidemic,

I have, &c.
(Signed) John Ferguson, M.D.,
President of the Board of Health.

APPENDIX (D.)

Meteorological Notes on the Weather of 1850, *by Richard Hill Esquire, of Spanish Town.*

"The temperature of *January* was rather higher than ordinary, and the month might be "represented as dry.

"Heavy rains commenced falling on the 3d *February*, and continued for a succession of "days. They were unusually heavy.

"The flycatcher birds, the muscicapadæ, were observed to be unusually few this "March.

"*April.* As soon as the hurly-burly of the equinox was over, fine *April* showers fell, "with fitful intervals of sunshine. There was a pleasant prevalence of the sea breeze all "this month.

"*May.* The sultry half humid, half dry weather, which commonly ushers in our May "rains, was accompanied by a good deal of dense visible vapour. We were very generally "affected by colds, that assumed all the character of influenza. Bronchial affections were "very prevalent.

"On the 20th of May rain fell copiously. The clouds rolling up in heavy masses from "the sea (south) came in good and profuse thunder showers. The weather put on all the "character of the old time seasons. In 1848 the vernal rains had been perfect deluges, "followed by unmitigated drought afterwards. In 1849, the month of May was dry "and hot, refreshed by only occasional breezes in the plains, and casual showers in the "mountains. Bowel complaints were common in both years. I had more than my share "of them for two successive seasons. The mental effects attendant on the disturbance of "the great sympathetic nerve were absolutely terrible. I found that very many persons "in distant parts of the island had been similarly affected with myself.

"*June* was rainy, with thunder and lightning.

"*July* was similarly rainy; and

"*August* was prodigiously hot, the thermometer ranging from 84° to 92°, at the coolest " and hottest periods of the day. The temperature sometimes rose to 94°, and on one " occasion it reached 96°. The heaviest falls of rain in the three preceding months were " at just about the full moon.

"*September* was remarkable for awful thunder storms in various parts of the island. " Several houses were struck, and cattle and sheep in the fields destroyed. The news- " papers spoke of thunderbolts being picked up after some of these electrical explosions. " They did not, however, describe what they saw or found. Insects were not numerous " in the plains. The month was hot; the thermometer on different days in the afternoon " varied from 84° to 92°, and from sundown to sunrise from 74° to 84°. Persons were " exposed to sensible chills at night; and those, that took the precaution to lay a folded " counterpane or blanket at the foot of the bed, found the necessity of drawing it over " them on the turn of the morning. Showers, sometimes light, sometimes heavy, with sharp " rattling thunder, were frequent. The great changes that occurred in the temperature " of the night were consequences of falls of rain towards sunset. I observed that the heavy " rolled-up cumulus clouds, that hung about the horizon at noon, were always flushed with a " roseate tinge. They strongly impressed a person, ordinarily indifferent to the appearance " of the atmosphere, with being excessively charged with electricity.

" The afternoon temperature, from June to September, had been like a furnace; and " the frequent rains that fell had kept the surface of the earth constantly moist.

" The first week of *October* gave intimation of early season rains. The sky was over- " spread for successive days with stratified vapour, and dense nimbus clouds came gathering " up from the south and south-west.* Rain fell, but not copious rain for an average " season.

" We had for about five days in October been enduring the fluctuations of heat and " cold in an atmosphere saturated with moisture, which turned to showers at every " sinking of the thermometer, when a report was spread that cholera had appeared in the " colony."

It is interesting to learn the remarks of so scientific an observer as Mr. Hill, on the terrible phenomenon of a new pestilence in his native country. I append, therefore, a short extract from a subsequent part of his interesting Journal; the closing remark will attract the notice of the medical reader.

" When a rapid succession of deaths, first in one quarter and then in another of the " town, and especially when, in an almost total destruction of the inhabitants on one side " of the road entering from Kingston, there had been demonstrated the virulence with " which pestilence in certain localities was fairly settled on the community, apprehension " and anxiety prevailed in every house. In the *second week* of the epidemic, counting its " commencement on the 19th, when the boy Graham came in in a state of infection and " died, it was no longer confined to the more indigent portions of the people, or the more " irregular-lived members of society. It had extended to the middle classes, marking its " inroads into better houses, by manifesting itself whenever some indiscretion in diet ren- " dered constitutions, otherwise robust and strong, by some temporary debility, accessible " to attack. In the *third week*, the disease had stricken down some members of the upper " families,—persons of staid habits,—and ordinarily of great equanimity of disposition.

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* Dr. Reid, of the 2d West India Regiment then stationed in Spanish Town, says in his report:—" I noticed that every day, for some time prior to the (epidemic) attack, about two " o'clock the air became very sultry, and that immense masses of heavy-looking clouds, with " very defined edges, hung over the town, and gave to every one a most unpleasant feeling of " tightness across the chest. This, I think, continued for about a week before the epidemic " broke out."

The remarkable appearances of the sky, immediately before the outbreak of the pestilence in Kingston, are thus graphically described by Dr. M'Illree:—" At Kingston the sea-breezes before " and during the prevalence of cholera were very uncertain and singular, and calms were con- " stantly observed; and it is an extraordinary fact, that on the evening of the night on which the " first case of the epidemic occurred in Kingston, immense fields of dark-coloured clouds were " observed from Newcastle, slowly advancing from the eastward, and accumulating to a sur- " prising extent immediately over the city and neighbourhood, where they became stationary, and " formed one gigantic mass, impressing the mind with the conviction that some terrific convulsion " of nature was about taking place; and that very night, as a local paper expressed it, 'Kingston " was visited by the most fearful thunderstorm it has ever been our fate to witness. The rapidity " with which the frightful crashes of thunder succeeded the lightning evidenced the propinquity " of the element to the city, and rendered the long period of its presence one of awful suspense."

" It is at least a strange coincidence, that the plague on its first appearance in that city should " have been heralded and sent forth, as it were, on its work of death, by so unusual and remark- " able a natural phenomenon.

" Our elevated position at Newcastle enables us at all times to observe the state of the weather " in the lowlands; and Kingston, which seems to be distant, in a direct course from this cantonment, " more than seven miles, though fourteen by the road, is generally so clear and perceptible, that " with the aid of a glass the people may be seen walking through the streets; but, on the occasion " above alluded to, the evening at Newcastle was sunny and fine, and we must have been some " 2,000 feet above the enormous embankment of clouds which appeared as if threatening the " town and its people with destruction."

" The explanation for this apparent deviation from the course which cholera had hitherto " taken, is the weariness and watchfulness,—the perturbation of heart and the depression of " mind, which more or less affected every one in the climax of the visitation. These were " as much predisposing causes of infection in the houses of the rich, as debility and ex- " haustion had proved in the abodes of labour and penury. Disorder of the spirit had " become to the one what infirmity of body had been to the other. On the termination of " the *fourth week*, when fatigue had well nigh worn everybody out, and wonder and dismay " were upon every countenance, and the medical practitioners themselves had been wearied " into disease, the pestilence as suddenly subsided as it had risen into virulent activity. " It seemed as if, on failing for twenty-four hours to find vitalized bodies on which to " develope itself destructively, it lost its intensity, and that, if it owed its existence to " some peculiar quality of the atmosphere, that quality was rapidly altered by the revo- " lution of a day. When the power of propagation ceased, because every human organi- " zation on which it could act had either been subjected to its action, or had successfully " repelled it, it died out exhausted. Now that I look back on this most marvellous " visitation, wonderful as the rapidity of its progress seemed, the suddenness of its " extinction is to me more strange and astonishing."

APPENDIX (E.)

Construction and Condition of Barracks, &c., as affecting the Health of Troops.

The *great defect in most barracks is their faulty and very generally insufficient ventilation*, more especially at night, when the doors and windows are closed; then no air can pass in or out of the rooms, there being no chimney, nor any openings in the roof. The ventilation is at all times only transverse; there is none from below, upwards. The windows being never carried up to the full height of the walls, there is of necessity an amount of vitiated air in the upper part of the chamber, which has no means of direct escape. In one barrack room which I visited, and which had been recently occupied, there was quite as much space between the tops of the small windows and the ceiling, as between the bottoms and the floor.*

The windows are almost always fitted with jalousies, the blades of which are generally fixed in one direction, opening downwards into the room; and not made to move, as they ought always to be, to regulate the admission of the air. The result has of course been that the men complain of the wind blowing right upon them, when—heated perhaps by exposure to the sun or by exercise—they dress or undress themselves, and when they are in bed. This has been particularly the case at night, when the wind from off the land is often extremely chilly, although immediately before it may have been sultry and oppressive. Attacks of dysentery, ophthalmia, and fever, &c. have been frequently traceable to this cause. To remedy one evil, another has most unhappily been introduced, viz., the affixing of solid wooden shutters, which, on closure, effectually exclude alike the entrance and exit of the air. Dr. M'Lean appropriately called them *suffocators*. It is in vain to speak to the men themselves of the ill effects of shutting them closely; they have all heard of the night air in hot climates being unhealthy, and they conclude that the more completely it is excluded, the better. The means of ventilating a barrack-room must be independent of the men, and out of their control and reach. The shutters ought to have been made in two parts, so that one could be closed when the other was left open. Colonel Yule, the present commanding officer of the engineers, has judiciously had them sawn across in many of the barrack-rooms. It is obvious that, had the windows been carried up to the ceiling, and been provided with upper and lower jalousied frames with moveable blades, so that the lower one might be reversed to prevent the air blowing upon the men, while the upper one was left open, there would have been no occasion for shutters at all. So little, however, has the subject of regulated ventilation hitherto been attended to, that in one barrack-room, some of whose windows were fitted with jalousied frames, these were so constructed that the lower half had the blades fixed in the wrong direction, while those in the upper half were moveable.

It is, however, much better that these jalousies should be fitted to the verandahs than to the windows of the barrack-room. In many of the barracks, there is unfortunately a verandah on one side only of the building; while the other on the land side, and which is therefore exposed to the chill night air, is unprovided with any. This is a very mischievous defect, which, by-the-bye, is never found to exist in the officers quarters. In others, the verandah is open to the burning rays of the sun, and to the wind and rain, so that the men are often unable to make use of it during the day, and it presents no means of checking the direct admission of cold air. Such is the case at Up Park Camp; where, if I am not mistaken, the barracks were originally built without verandahs at all; these having only been added at a subsequent period, after a season of excessive mortality!

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* This stupid blunder of having a considerable depth of space from the ceiling without any opening or outlet must cause of course the accumulation there of foul heated air, which, as it cools, will descend and mix with a lower stratum. Many of the public buildings in Jamaica, besides barracks, afford examples of it. On one occasion, I saw a clergyman half stifled by preaching in a town hall. The level of the pulpit was above that of the tops of the windows.

The lower barrack-rooms are invariably worse ventilated than the upper ones; and yet, if one set stand more in need of free aeration than the other, it is certainly the former, considering that, as a general rule, the ground floor apartments are always most insalubrious.

For any room to be properly ventilated, there must be suitable openings for the admission of fresh air, as well as others for the escape of the foul; the same openings will not answer for both purposes. Moreover, the former should be near the floor, and the latter as near the ceiling as possible. Besides, therefore, having all the doors jalousied, the plan adopted in the hospital of the Penitentiary at Kingston (see p. 45), of having grated apertures through the wall, on a level with the floor, is a good one. In short, whatever serves to keep up a continual moderate perflation of air in an apartment where many sleep together, is necessary for the maintenance of health, in a tropical climate; always provided that the perflation is so regulated, as not to cause a chilling of the surface. This may always be easily effected by breaking the force of the stream of air, when this is too great, by covering the apertures for the entrance of the air with gauze or metallic gauzework.

On the roofs of some barracks there are ventilators; in others there are none. Occasionally they have actually been boarded up, as if they had been deemed of no use! They are more frequent upon hospital, than upon barrack, buildings; one evidence, among many others, of the common fallacy, that thorough ventilation is more needed for the sick than for the well.

In one spacious barrack, which has not been occupied of recent years, I observed several large grated openings or hatches, communicating directly, and without any shaft, between the upper and lower rooms. These had been made doubtless for ventilation; but there had been no provision to prevent the foul respired air, from the men below, passing at once into the upper ward. The hint had doubtless been taken from shipboard. In those days, the soldiers were swung in hammocks, sometimes two or three deep, in barrack-rooms, as between decks. It was not till the year 1827, that beds were provided for the soldiers. With such a state of things, taken in connexion with the other pernicious agencies at work upon the health of the soldiers, can we wonder at the frightful mortality in former years among the troops in Jamaica and other West India islands?

The whole structural arrangements are sometimes most objectionable, from the foundation upwards. Take, for example, the barrack and other buildings *at Fort Augusta*. They have not been used for several years past. They stand upon a low flat tongue of land, which projects into Kingston Harbour on its west side. The ground being only the sandy beach, water is come to at within a foot of the surface; and, every here and there, it is riddled with crab-holes. After heavy rain the whole barrack-yard becomes little better than a pool, until the water sinks into the loose sand, where the foot will sink ankle-deep. Bricked or stone pathways lead from one part of the yard to another. No wonder, then, that several of the buildings, having been put down without a preliminary secure foundation, are now leaning over and giving way. Those situated immediately within the garrison walls are green with damp, and their floors are rotting away; the flooring had been laid down within a few inches of the wet sand. Their ventilation is of course most defective; in this respect, the stables are much better than the rooms provided for the men. The lower barrack-room must have been a place of suffocation; it is low in the ceiling, dark, and uncomfortable. The top of the windows is at least two feet from the ceiling, and they have solid wooden shutters. The officers quarters also are most unsuitable for a hot climate; no air can pass directly through them; and the rooms on the ground floor of the building, and which were occupied by the non-commissioned officers, are little better than prison cells; so gloomy and so close they are. It is worthy of passing notice that the house of the commanding officer stands, about the centre of the barrack-yard, on a small plot of ground which has been artificially raised six or eight feet above the level of the yard. Why was not some such plan followed with the men's quarters? Not less defective than those of the barrack-rooms are the arrangements of the hospital. It seems to have been altogether overlooked, in the construction of these buildings, that there must be provided means of escape for the foul air as well as for admitting the pure. Here, as elsewhere, military hospitals are generally very gloomy; they are unnecessarily dark and cheerless.

As a proof of the extreme humidity of Fort Augusta, the powder barrels in the magazine require to be kept a foot or two above its terraced floor; and the utmost difficulty is experienced in keeping the arms in the armoury from rusting. If humidity is a predisponent or favouring cause of disease, we cannot be surprised at the unhealthiness of this station. An immense amount of treasure must have been spent on the fortifications; but, doubtless, the expense was far less than that which was occasioned by the sickness and mortality, which were continually going on among the troops when quartered there.

That the faulty and defective ventilation of barrack-rooms had much to do with the fatality of the cholera among the troops, cannot be questioned; it is emphatically alluded to in several of the military reports. At Port Royal, the evil is made worse by the very injudicious arrangement of the buildings,—which, instead of being separate and detached, form three sides of a narrow quadrangle. At Kingston and Up Park Camp, until the want of a jalousied verandah on the north or land side of the barracks is supplied, no proper ventilation can ever be effected. At Spanish Town, the construction and arrangements are altogether much better. The lower or basement floor is not used as a dormitory for the men; the first barrack-floor is thus raised well above the ground. Then, there is a jalousied verandah on the rear, as well as the front, side of the building. Some alterations are

still wanting, it is true, to regulate and improve the ventilation; but nevertheless this is vastly superior to what exists in most other barracks.

The hospital is not nearly so well ventilated as the barrack-rooms; it is apt to be close and offensive at night. Its general construction is obviously faulty.

The cholera was decidedly less severe among the troops here than elsewhere; although, as will have been seen from the narrative of the epidemic, not only was the disease of exceeding virulence in Spanish Town, but the soldiers were also employed in digging graves and otherwise more exposed than at other stations.

The barracks at Apostles' Battery, at the west entrance of Kingston Harbour, are in point of ventilation among the best in the island. I am surprised that they are so little used. They would form an excellent place of immediate refuge for the troops at Port Royal, in seasons of epidemic sickness there. It might indeed be found necessary to move the troops up to a mountain station; but the change to Apostles' Battery, which is close at hand, should be tried in the first instance. In ordinary seasons, they might be advantageously used, I should think, as a place of convalescence for the sick of both services. The situation is elevated, dry, and well exposed to the sea-breeze; the chief drawback is a bad water supply; but this might be brought from Port Royal.

The *guard-rooms* at the different cantonments are generally most unwholesome, and prove a not unfrequent source of disease, from insufficiency of space, bad ventilation, lowness of site, &c. A good many men were attacked with cholera while mounting guard, or in the guard-room; and such cases usually proved most malignant.

There are many other points connected with barracks and barrack-yards, deserving the notice of all who are interested in improving the comfort and health of troops, and in protecting them from endemic or epidemic sickness, more especially in tropical climates. Suitable covered places or buildings for the recreation of the men, and which might be advantageously used at the same time as their mess-rooms, are, as appears to me, much wanted. It might be well that the ground floor of barracks should always be used for this purpose, so that the upper floor or floors alone were used as dormitories. There is no question that sleeping near the ground is unwholesome in tropical countries. Thus a double advantage would be gained.

Barrack-yards should be well drained. Several of them struck me as very damp and retentive of moisture after rain. Moreover, great benefit would be derived from having a portion paved or terraced, so as to afford a place of out door recreation in very hot weather. An awning might be easily stretched over it. In connexion with these points, I would take leave to ask whether it might not be advisable that, once or twice a year, the troops in every station should be regularly put under canvas for a fortnight or three weeks at a time, whether the season was unhealthy or not. The men would thus be accustomed to a change, whose adoption is of inestimable importance in seasons of epidemic sickness; and an opportunity would be, at the same time, afforded to thoroughly sweeten and cleanse the barrack-rooms in use. The Jewish custom of living in tents or tabernacles at a particular season had probably a sanitary object, as well as a religious and historical significance. All barrack buildings should have a wide tiled gutter around the walls to carry off the rain as it falls, and prevent it from soaking into the ground, so that the basement might be dry at all seasons.

The *state of the privies in all the barracks*, which are not immediately close to the sea, is altogether most disgusting. It is difficult to exaggerate their abominable condition at Kingston, Spanish Town, and Up Park Camp. Repeated complaints have been addressed to the military authorities by the parochial authorities, as well as by the residents in the neighbourhood of the barracks, in the two former places, upon the subject; but hitherto without avail. One of the principal thoroughfares in Spanish Town is purposely avoided, in consequence of the horrible pollution of the atmosphere from this cause. Equally bad is the state of things on the west side of Kingston Barracks; where, not to mention the abomination of the large open dungpit within the walls sending forth its foul effluvia all round, there are two or three huge vaulted cesspools immediately under the surface, and which, it is believed, contain the accumulated excretions of hundreds of men for a great number of years. It has been, more than once, proposed that a sewer or large drain should be carried from this cloacal receptacle down to the harbour; but no steps have been taken either to effect this work, or in any other way to abate the nuisance. The above proposal is not devoid of serious objections, unless means were used at the same time of conveying away the sewage to a considerable way into the sea, or of diverting it from the harbour altogether. The closet for the use of the officers is kept tolerably sweet, by the waste water being carried through it. Why should a similar arrangement not have been adopted for the comfort of the men? On the outside of the barrack walls, there was an open gutter, down which the urine from the soldiers urinals within flowed, and was conveyed away by an open channel into the cesspool spoken of. The stench from this in the street used to be horrible, until the attention of Colonel Yule was drawn to the nuisance last summer. He immediately had it corrected, by having the gutter and channel covered over.

So great is the privy nuisance at Up Park Camp that, in my opinion, it is one of the chief causes of the distressing amount of sickness which has so often, in former seasons, prevailed among the troops there, and of the persistent cleaving of the choleraic poison during last year to this station. The necessaries are three or four in number, situated a little in the rear of the barracks, between them and the hospital buildings. The effluvia

from them is at all times most offensive. In the evenings, the land wind brings the tainted atmosphere right upon the barrack rooms, and the stench is then disgusting. I have often been quite nauseated at a considerable distance from them, when the wind blew from their direction. On approaching them, the nuisance is intolerable. The urinous exhalations from the ground (for there are no urinals provided for the men) are another source of pollution, nauseously perceptible in certain states of the atmosphere. The walls of one of the privies had fallen in when I was there, and the place was therefore closed for the time; the others consequently received a greater accumulation. Nothing can be worse than the construction of these places; they are literally shut boxes over huge pits of ordure, the fluid parts of which soak into the ground, while the solid matter goes on accumulating for one or two years or longer, until it is imperfectly removed,—to be transferred to another pit, no one seemed to know where. The only ventilation, that has been attempted, is by a shaft carried up from the dung-pit to the outside of the building, with the view of carrying off in some measure the horrible effluvia from its interior. A stranger entering them revolts from sickness. No mere palliation can correct the evil, or even much diminish the nuisance. Cartloads of lime and bushels of chloride of lime will not do. Incessant applications were made by the medical officers for supplies of those matters to abate the offensiveness, during the prevalence of the cholera; but, however freely used, the benefit obtained was but inconsiderable.

The privies of the officers are in front or to the south of the barracks, which are thus exposed to pollution in both directions.

It may not indeed be easy to adduce direct proof that the health of the troops has suffered directly from the cause in question; and for this simple reason, that other sources of insalubrity have been existing in, or about, the barracks at the same time. All that I shall say is that, if contamination of the atmosphere with putrid effluvia be recognized as a localizing and fostering agency in the development of disease, then it is in full operation in the barrack-yard at Up Park Camp; a station which I cannot but think *ought*, so to speak, to have proved far more salubrious, even to white troops, than it has hitherto done. The situation is fine, well exposed to the sea-breeze during the day, and refreshed by a cool land-wind at night. There is, moreover, ample space about it for the recreation of the men, if proper sheltered accommodations were provided for the purpose; and there has been, of late years, an abundant supply of water. It is well known, too, that the pens or private residences in the neighbourhood of the cantonment are, on the whole, considered healthy. The cause of the insalubrity must be sought for in artificial rather than in natural, in intrinsic rather than in external, agencies,—agencies resulting from the neglect and violation of simple sanitary laws, whose observance is especially necessary wherever masses of human beings are congregated together in a limited space, as in barracks. I must not forget to mention that the burial ground is at the north-west corner of the cantonment, and is so situated that the exhalations from it have been complained of in the quarters of some of the officers.

That the present system of periodic emptying of barrack privies, while of course it is an intolerable nuisance every time it is done, is anything but inexpensive to the service, will appear from the following data which I have every reason to believe are accurate. The sum charged annually for Kingston Barracks and for Up Park Camp is upwards of 60*l*. But this is not the only outlay incurred. The quantity of lime alone, exclusively of other deodorants, supplied to the different stations, amounts to a considerable sum. In the course of one year, nearly 300 bushels, at an expense of little less than 50*l*., were made use of in a single cantonment, Newcastle; and it is notorious that, notwithstanding this large consumption, complaints are continually being made of the exceeding offensiveness of the privies there, and that the medical officer has declared his opinion that the health of the troops has suffered in consequence of the nuisance.

Besides the sources of unhealthiness already mentioned, there are others which operate with most pernicious influence on the health of the soldiers, and which have always contributed their share to the production of fatal disease among the troops in Jamaica. Among the foremost of these, is the vice of *intoxication*. It has been seen what disgraceful scenes took place at Port Royal, when the cholera broke out in the barracks there. I was informed by an officer resident at the time at Up Park Camp, that there was scandalous excess there also. The earliest cases at Newcastle were in men who had been away drinking. It is indeed deplorable to hear, from all quarters, of the ruinous effects of this degrading habit among British soldiers. Officers in command universally declare it to be the principal cause of offences and crimes, and the reports of the medical officers teem with urgent remonstrances upon this fruitful source of disablement and disease. Yet, no effectual steps are taken to arrest this crying evil. The present system of canteening is altogether most vicious, and is most discreditable to our military authorities For what is the case?—Government actually draws a revenue, at the expense of the welfare of the men. For myself, ignorant till recently of regimental economy, I could not credit the statement when it was first made to me; and, even now, I can scarcely believe that the Commander-in-chief or the Secretary of War can *knowingly* permit such an enormity to continue.* That it does exist, is but too true; as appears from the following remarks made

* Upon recently conversing on this subject with an officer occupying a high official position, he admitted that canteens were often let by the Ordnance authorities for more than they are really worth; the inevitable consequence being that the contractor is compelled to sell inferior articles at extortionate prices to protect himself against loss. Yet, many of these men actually make large profits.

by Dr. M'Illree in his sanitary report of Newcastle, Jamaica, from 1st April 1850 to 31st March 1851.

"There can be no question but that very many of the cases, admitted into hospital "during the past year, have been directly or indirectly the product of intemperance; for, "besides those instances where a positive proof was not wanting to justify this conclusion, "experience testifies that men who drunk ardent spirits, as the generality of soldiers in "this country do to a most destructive extent, that the strongest constitutions must "eventually fail, and that many of the cases of sudden death from acute attacks have their "origin in this disgusting vice, and are inexplicable from any other cause. *I believe there "are few men in this cantonment who are not intemperate in this respect;* even the steadiest "and best conducted soldier drinks sufficiently large to injure his general health, and lay "the foundation for future illnesses.

"*The present contractor, who pays Government for permission to sell spirits within this "cantonment* 2*l.* 0*s.* 10*d. for every ten men per month, must sell at least* 4*s. worth of rum to "each man in the garrison every month to pay his rent, which is not far short of* 900*l. per "annum, besides the large profit which each soldier must make up by his numerous visits to the "canteen; thus the man, who has* 1*s.* 9*d. for personal expenditure per week on this station, "must pay it all for drink, to make it worth while for a contractor to pay this enormous rent "for the use of a canteen in barracks.*

"I know of no means which will be sufficient to counteract the tendency to drunkenness "and intemperance in soldiers. Where the disease is of long standing, no human power "will be effectual; the only hope is in the young soldier, who is not confirmed in the vice; "but even for such (the daily example at the canteen, where he gradually becomes a daily "visitor,) there is little chance of his long continuing a sober man when the licensed dram-"shop is at hand, and where he can temporarily get rid of every feeling of monotony, and "is insensibly led to habitual dissipation and consequent crime and punishment, if not to "sudden and early death."

This is but a specimen of what is going on at other stations in the island. The canteen contractor at Maroon Town pays to the Ordnance Office 200*l.* a-year. It will have been seen (p. 73) that the only cases of cholera in that cantonment occurred in men, who had been drinking together. If other comment were needed, it will be found in Dr. Maclean's annual report on the health of the troops in the island, during 1850-51. Alluding to the fever which prevailed at Maroon Town, he says: "Among the European troops it set in with "great violence, and had a remarkable tendency to be accompanied with local congestions. "When early attended to, and the constitution of the soldier was not broken, the cases did "well; but when the men failed to apply early in the attack, or *had been attempting to arrest "the initiatory symptoms by a fit of intoxication,—a practice unfortunately too frequent,*—or, "when the constitution had been previously injured by irregularities, the disease observed "a very severe character, running into a low and malignant type. The fatal cases ter-"minated with yellowness of the skin, and the formation of black vomit in the stomach."

There is a nominal supervision of the canteen kept up, by stationing a corporal at the door; but his duty is rather to prevent any disturbance within, than to maintain any check upon excessive drinking. The keeper of the canteen at Port Royal replied to an interrogatory I put to him, that "no man was allowed to buy more than a gill (four ounces) of "spirits a day, but that of course he did not know whether anyone had more. It was no "duty of his to keep an account of what every man drunk." There is attached to the canteen at this place a small tap-room, where eight or ten might sit round a table to smoke and drink. All this is surely very bad; and the evil is aggravated tenfold by the pernicious nature of the liquors provided. If any light refreshing beverage could be had, the men would doubtless often have recourse to it. No malt liquor is to be had, except at the cost of 1*s.* a bottle; and wine is seldom or never kept. The result is that rum, generally of the most inferior and often of positively noxious quality, is almost universally drunk upon all occasions. Dr. Maclean informed me that at Demerara, when he had charge of the troops there, they were supplied with draught malt liquor, to the great benefit of their health; and it is well known that in the French service, both on land and on board ship, light wines are provided for the troops and seamen. Why may not similar arrangements be made for the British soldier, everywhere? *It is hopeless to expect to correct the present most pernicious state of things, unless proper substitutes are found for the poison which is now supplied.* Men must have something to drink in a hot climate; the natural demand cannot be resisted. Surely then it is only the duty of those, to whom the welfare of the soldier is committed, to see that at least this demand can be gratified without inevitable mischief. It would be easy to show that, in a mere money point of view, the present system is much to be deprecated. The amount of sickness, invaliding, and death, clearly attributable to intemperance, is every year very great; and the common calculation is, that it takes 100*l.* to replace every soldier withdrawn from the service. An immense amount of benefit has, of recent years, been effected in our naval service by repeated reductions in the quantity of the grog served out to the sailors, and by the substitution of simpler and more wholesome beverages. Should not similar improvements be attempted in the canteening of barracks? The attempt, carried out with considerateness and judgment, would be quite as acceptable to the soldier as it has proved to the sailor. The want of an officer in the army, corresponding to the purser on board ship, may probably have prevented in some measure the introduction of many changes that are much required in the provisioning, &c. of our troops.

Hitherto, I have scarcely made any allusion to the *site* of the military stations in Jamaica,

as affecting the health of the troops. Doubtless, the question is important; but probably undue prominence has often been given to it, to the exclusion of sufficient attention to the sanitary arrangements of barracks, barrack-yards, &c. The situation of the barracks at Port Royal is exactly the same in all respects as that of the dock-yard, and where the few well-housed residents in the town live. Yet the troops suffered most severely from the cholera, and the latter entirely escaped. At Up Park Camp, where the mortality was so great, there was no death among the officers, and not above one or two suffered at all. Moreover, as has been already remarked, the pens around the cantonment are generally very healthy. Even the mountain station of Newcastle did not prove a defence against the pestilence among the soldiers, although the officers escaped without hurt. And here I cannot but remark, that I much fear that if the acknowledged sanitary defects of that, hitherto regarded most salubrious, cantonment are not attended to in time, it may ere long lose its much-boasted character. In the course of a debate on the army estimates in the House of Commons on the 28th of March of last year, the Hon. Fox Maule, then Secretary of War, made the following remarks:—"The last point to which he would refer was that of "mortality in the army; and he was happy to be able to state that, as a general fact, the "mortality in the army had of late very much decreased. During the prevalence, for "example, of that most fatal disease, cholera, in Jamaica, while all the other portions of "the population, white and black, fell victims to the malady in all directions, the military, "owing to the precaution taken of fixing their barracks high up on the mountains, "altogether escaped the pestilence. In reference to the army in Jamaica, he might here "state that, whereas for some years previous to 1836, when the sanitary regulations there "were greatly improved, the proportion of mortality in the army was 128 per 1,000, the "proportion had since fallen to 14 per 1,000. In fact he might state that, with the excep-"tion of some two or three especially unhealthy localities, the mortality in the British "troops abroad was not greater than it would be at home."*

The subsequent history of the pestilence has unhappily not verified Mr. Maule's sanguine statement; and if any other proof was wanted to show that mere elevation of site will not suffice to maintain the health of troops in such a climate, the unexpected occurrence at Newcastle of several fatal cases of fever with all the characters of yellow fever, in 1849, may well give rise to serious apprehensions. These cases were clearly attributable to the operation of local impurities in the building where they occurred. No climate, however favourable, will compensate for the neglect of sanitary arrangements in and around dwellings, and of vigilant attention to the habits of the soldier. Had these been better understood and more effectively carried out, the station at Stoney Hill might, I believe, have proved far from unhealthy; and there would, possibly, have been no necessity for establishing a cantonment at so inconvenient, and in several respects undesirable, height as at Newcastle. "Jamaica," Lord Metcalfe remarked, "offers almost every climate, and that of about 1,200 "feet above the level of the sea is a perfect one." Stoney Hill is at that very elevation; yet the barracks there are deserted, and—which I cannot but think is much to be regretted—allowed to be falling to pieces.

In concluding these remarks, I would very respectfully take leave to offer two suggestions from which, if acted upon, much benefit would accrue, as seems to me, to the public service; —first, that the engineer and medical officers should make their annual inspection of barracks, hospitals, &c. in the company of each other, and not at separate times, and without the advantage of mutual inter-communications on the spot; this is the more necessary, as there is frequently considerable difference of opinion between them on matters affecting the welfare of the soldier;—and, secondly, that periodic (annual or biennial) reports should be published by the Army Medical office respecting the health of the troops at home and all stations abroad, the condition of barracks and cantonments, &c. &c. The latter suggestion would be but giving effect to the object of the circular which was issued from the War Office in April 1838, and wherein it is stated:—"It appears from recent investigations "that several of the medical authorities are inclined to attribute a considerable portion of "the unhealthiness of many stations to causes which are susceptible of amelioration, and "that these causes may principally be comprehended under the heads of duty,—barrack "and hospital accommodation,—diet,—intemperance,—and crime, to all of which points "their attention is therefore specially called."

There is an immense amount of most valuable and instructive information upon all these subjects, as well as upon the development, prevalence, and results of disease in every quarter of the globe, in the archives of the Army Medical office. It would be a great boon to sanitary progress in general, if means were taken to make such information widely known. On no subject connected with the public health, might a few hundred pounds be more advantageously spent every year than in carrying out such a work. It has been long much required; and never could it be more ably and efficiently done than now.

* The great mortality among our troops at Hong Kong in 1850, when the civil population and the ships of war were perfectly healthy, clearly shows that there was something faulty in the arrangements of the service for such a climate, whether as regards the barrack accommodation for the men, or their undue exposure to atmospheric vicissitudes by night and by day, or the influence of other noxious agencies upon their systems. During the last four or five years too, there has been, on several occasions, a large amount of sickness, not unfrequently terminating fatally, among the military in Malta, while the inhabitants remained quite exempt. Certain barracks there are, I am informed, notoriously unwholesome. As an instance of another description, allusion might be made to the great aggravation of the dysentery which prevailed in different regiments during the war in China, owing principally to the bad quality of the provisions served out to the men.

APPENDIX (F.)

From the First Notification of the Central Board of Health.

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"The general result of the experience of almost all the medical men in this island, who have had large opportunities of witnessing the cholera since it first appeared in the beginning of October of last year, has been that it may spread, as an epidemic disease, independently of human intercourse or personal communication. All endeavours to restrain its progress by quarantine measures have hitherto proved ineffectual. On the first irruption of the pestilence into Europe in 1831-2, each nation attempted to prevent the invasion by rigorous quarantine and other restrictive means; but in every instance without avail. Again was the like attempt made in 1847-8, and again it was found and declared to be utterly ineffectual."

"In Great Britain the questions of the importation of cholera as an epidemic, and of the practicability of preventing its introduction by prohibitory regulations, have been more attentively examined than in perhaps any other country; and the result of all the inquiries has been a very general concurrence of opinion as to their entire inefficiency. The General Board of Health of England expressed their deliberate opinion on the subject, in their report on quarantine, and in their first and second notifications issued in the autumn of 1848; and the Royal College of Physicians of London, embracing almost all the distinguished physicians in England, recorded about the same time their sentiments in the following words:—'Cholera appears to have been very rarely communicated by personal intercourse, and all attempts to stay its progress by cordons or quarantine have failed. From these circumstances the Committee, without expressing any positive opinion with respect to its contagious or non-contagious nature, agree in drawing this practical conclusion, that in a district where cholera prevails no appreciable increase of danger is incurred by ministering to persons affected with it, and no safety afforded to the community by the isolation of the sick.'

"To the soundness of this conclusion the Central Board of Health would express their entire assent."

"It is to be observed that the circumstance of healthy persons from an uninfected district having caught the disease by going into an infected locality does not at all invalidate or affect the opinion now expressed; such persons became exposed to and inhaled the atmospheric poison in the place where it existed, and were equally obnoxious to its deleterious agency with the residents in the infected locality itself. If such persons on returning to their uninfected district were not only attacked themselves with the disease, but became the centres or *foci* from which it spread around in the neighbourhood and thence to the adjacent district, there would certainly be strong reason to believe that its diffusion was owing to personal communication or to contagion, as such an occurrence is usually denominated. But no substantiated instance of this kind, with exact details as to the dates of the earliest cases of the disease, the place from which the patients came, and as to whether the locality and district were perfectly healthy at the time of their occurrence, with other particulars necessary to be known, has been brought under the knowledge of the Board. On more than one occasion, alleged instances of the sort have been ascertained, upon examination, to be entirely fallacious. It is, however, to be remarked that several cases have been related to the Board by medical witnesses, where one or two inmates of the house, to which a person had returned from an infected locality with the disease upon him, became soon afterwards affected with it, while the neighbourhood was at the time wholly exempt; but upon no such occasion did the disease ever manifest any tendency to spread as an epidemic."

"The striking exemption, upon the whole, of nurses in cholera hospitals and of the attendants of the sick in the airy apartments of private dwellings, not to multiply similar facts, affords a most gratifying proof that no danger is incurred by ministering to the sick, even when many are congregated together, provided free ventilation and thorough cleanliness be maintained in the apartment, and all intemperance be avoided."

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"The extreme importance of a free and continual ventilation of dwellings, and more especially of sleeping apartments, has not hitherto been sufficiently recognized in the construction of houses for the labouring classes in Jamaica. During the night, the atmosphere within becomes contaminated in the very highest degree, in consequence of the ignorant closing up of every orifice, whether door or window. The evil is increased by there being no opening in the roof, such as exists in houses in colder climates. There is thus no means of escape for the foul air, nor of admission to the fresh air; and yet the constant renewal of the air, that is breathed, is indispensably necessary for the maintenance of the healthy existence of all living beings. The mere congregation of a number of persons in a confined unventilated space is sufficient, at all times, to produce serious disease. During the prevalence of epidemic sickness, the pernicious results of neglecting the above simple law of life are aggravated tenfold.

"As interfering with the free play of a pure atmosphere around dwellings, all rank vegetation in their immediate vicinity, such as is so frequently seen in this country close to negro huts, should be removed, and the surface of the ground kept free from vegetable *debris*. Besides preventing the free access of air, rank vegetation near to dwellings tends

to keep up a state of dampness, which is one of the most powerfully predisponent causes of disease. A wholesome dwelling must be dry as well as clean and airy.

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"Besides the regular removal, at short intervals of time, of all nuisances from and near to habitations, and the adoption of suitable means of promoting their free ventilation, the lime-washing of houses has been found to be extremely useful. This expedient is of such easy application, and is so inexpensive, that it should never be omitted with all the inferior description of houses, in a district which is threatened with the epidemic. It needs scarcely to be remarked that the lime-washing of the *interior* of the house is of much greater consequence than that of the mere exterior. The lime used in the process should be fresh burnt and fresh mixed, as it is only in its caustic state that lime can be said to possess any disinfectant properties."

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"With respect to the interment of persons who die from cholera, the Central Board are of opinion that the prevalent notion, that a dead body is more liable to retain and give off infectious effluvia than a living one, is not warranted by any authenticated facts within their knowledge. Medical men have been engaged, day after day, in handling and examining the bodies of patients who have died from the pestilence; and there is scarcely an instance, as far as the Board are aware, of injurious results to them or their assistants. The apprehension, therefore, of infection emanating directly from a dead body should be dismissed from the minds of those who have to be in attendance. In like manner, the Central Board do not deem it necessary that any special or distinct burial grounds should be used for the victims of cholera, provided always the place of interment be at asuitable distance from human dwellings, and the graves be dug of a sufficient depth. The great object should be to remove out of the house, where the death has taken place, the dead body, liable as it is to very rapid decomposition in a tropical climate, and to have it buried in a becomingly short time. In numerous instances, the interment has been made with most indecent haste. A period of at least six hours should be allowed to elapse from the time of death.

"Should it unfortunately happen that great mortality occurs in a district where there is difficulty in obtaining a supply of coffins, the Central Board would recommend that the corpse should be rolled up in the body or bedclothes, and plastered over with pitch, tar, or lime, and thus conveyed to the place of interment.

"There is no necessity for burning the bed or bedding of a cholera patient; but they should, of course, be washed and freely exposed to the air. The addition to the water of the solution of chloride of zinc, or of other similar chemical salts, has been found serviceable.

"It is always prudent to employ a vehicle where practicable, and not the labour of bearers, for the conveyance of the dead to the place of interment; great fatigue, from whatever cause, predisposes a person to the invasion of epidemic disease.

"The keeping of wakes at funerals has been so often followed by the sickness and death of the persons attending such idle meetings in infected districts, that the Central Board are of opinion that they should be strictly prohibited.

"The Board would take this opportunity of expressing their opinion that all burials within towns, or very near to human dwellings, should be discontinued throughout the island as speedily as may be practicable."

* * * * * * * *

"The subject of the diet of the working classes in this island, in reference to its influence as a favouring or determining cause of choleraic attacks, deserves serious attention. Long fasting, followed by excessive eating, ought to be carefully avoided. Fatiguing exercise in the morning, before food has been taken, is not without danger. It is much to be desired that the use of fresh animal food was more general and frequent, than it is among the labouring population of our towns and rural districts. The proprietors or managers of estates might do much to improve the dietary of the people, by having a bullock slain once a week or oftener, and selling it at as low a price as possible, so that only no loss should be incurred. A small portion of such meat, with a due proportion of Indian corn, rice, or the better sorts of the ordinary bread kind of the island, would form a much more nourishing and wholesome diet than what is almost universally used by the working classes. The substitution of peppers and other warm spices (so freely made use of among the native population of the East) in place of the excessive use of salted provisions, very often rancid at the same time, would be productive of much benefit.

"That the insufficient clothing of the lower orders, and the consequent exposure of the surface of the body to the alternations of heat and cold so frequent in this climate, and to the chilling effects of wet and moisture, predispose to attacks of cholera, cannot be doubted. In all bowel complaints it is very necessary that the skin be kept warm, and protected against sudden chills. It would contribute much to the health of the working classes, if they were accustomed to wear a jacket or dress of thin woollen material next to the skin during the day; and at night the use of a similar garment would be, in very many instances, more defensive against the cold damp air than a mere mat or blanket. In the event of a charitable distribution of warm bed clothing to the poor, when attacked with cholera, it might be more useful, as well as less expensive, to give flannel dresses in the place of blankets. The practice, common among the negroes, of sleeping at night in the same clothes which have been worn during the day, is decidedly unwholesome. The poor should be cautioned against the danger of sleeping on the bare ground. A bed is of such easy construction, that there can be no excuse for any one being without it."

From the Second Notification of the Central Board of Health.

Sugggestions for the Treatment.

" The disease may be said to have four stages, viz., the premonitory diarrhœa, in which (with or without vomiting) the stools are frequent, liquid, and of a yellow or feculent colour.

" The second, in which (with or without vomiting or cramps) the stools are destitute of bile, shreddy, or like rice water.

" The third or state of collapse, where (with or without vomiting, or purging) the heat of the body is diminished until often an icy coldness ensues, the pulse being feeble, and sometimes totally imperceptible; and

" The fourth or stage of re-action, characterized by fever and congestion of some of the viscera, the brain being generally implicated.

" These stages are not observed in every case, as sometimes the first evacuations resemble rice water; but it rarely happens that collapse takes place without some premonitory symptoms preceding it.

" The stage of re-action has been comparatively rare in the present epidemic.

" In this disease the poison produces, in the first stage, irritation of the mucous lining of the alimentary canal and torpor of the skin; in the second stage, arrest of secretion, and transudation of serous fluid into the alimentary canal; and in the third a marked change in the blood, which has been gradually taking place from the commencement of the attack.

" It is on this view of the disease that the treatment is based.

" In the first stage, the moderate use of opium, combined with aromatics, is indicated; and, when assisted by external warmth, it will very frequently prove successful in arresting the disease. The addition of a few grains of calomel to the opium has been frequently found serviceable. But it is only at this period that opium should be given; as, when the secretion of bile is arrested, it augments the torpor, and has in very many instances, as is now almost universally acknowledged, done irremediable mischief. Should the opiate remedies fail to afford speedy relief, the treatment for the second stage should be had recourse to, even should the secretion of bile be not yet entirely suppressed.

" When the patient is first seen, he should be confined to bed; and, for the relief of the gastric and abdominal symptoms, have a sinapism and flannels moistened with spirit of turpentine applied externally. The cramps will be assuaged by dry rubbing or the use of stimulating liniments, and by a hot air bath*, if it can be easily procured.

" When opium has failed to arrest the disease, or the patient is seen for the first time in the second stage, the mercurial treatment should at once be had recourse to, and persevered in until its effects are discernible by the stools assuming a green color, when its use may be suspended.

" A scruple of calomel is to be given as a dose in the first instance, and afterwards a grain every quarter of an hour until the desired effect is produced. Should the temperature become lowered, or other symptoms of decrease of power appear before the mercurial action is perceptible, the saline medicines, viz., a combination of chlorate of potass, carbonate of soda, and chloride of sodium, should be given every half hour; continuing the mercury, until the stools have assumed the character above mentioned, or the stage of collapse sets in, when the use of this mineral, if it has already been freely administered, may be discontinued.

" At this stage, if it has not already been done, the patient should be wrapped in blankets, the frictions be continued, and a hot air bath, if practicable, be given.

" If the patient is seen for the first time in a state of collapse, and has not already taken mercury, it would be advisable to give a scruple of calomel immediately, and to administer saline medicines every quarter or half hour according to the exigency of the case, and in extreme instances saline enemata. Turpentine enemata have also been found serviceable. The wrapping up in blankets, the use of the hot air bath, the application of bags filled with hot sand, or bottles of hot water along the limbs, frictions with mustard flour, stimulating liniments, &c., and in fact every means capable of preserving the animal heat and safely exciting the circulation, should be had recourse to, and the saline medicines should be continued until bile appears in the stools, when the intervals between the doses are to be gradually increased until eventually they are discontinued altogether.

" If instead of receding, the disease appears to advance, a little brandy may be cautiously given; but large quantities of it have been found not only useless, but prejudicial.

" When the prostration becomes considerable, small doses of camphor, capsicum, and carbonate of ammonia made into pills may be given, in conjunction with the saline medicines.

" As many persons have died suddenly in getting out of bed to go to the night chair, in this stage of the complaint, the patients should invariably use a bed pan, without getting into an upright position.

" If the discharges from the bowels, from their frequency and copiousness, appear to be rapidly exhausting the patient, astringent and stimulating enemata may be given every

* A hot air bath can readily be prepared by placing on a hospital bedstead with sacking bottom, a sufficient number of blankets to cover it so as to reach to the floor, and by placing under the bedstead one, two, or more saucers containing strong rum, set on fire.

hour, until relief is obtained. Acetate of lead, turpentine, &c., have been used for this purpose. Should the irritation of the stomach continue after mercurial action is established, or after the stools have become yellow under the saline treatment, two drops of creosote may be given in some mucilaginous fluid every hour, for a few doses. Nitrate of silver, oxide of bismuth, or hydrocyanic acid will generally check vomiting; but these medicines should only be used under the immediate direction of a medical man. The application of stimulants externally, and occasionally of a blister over the epigastrium, will be required.

"When the patient complains of pain and uneasiness in the bowels, warm fomentations or a poultice will afford relief. Purgative or aperient medicines should be used with great caution. An enema of warm water when deemed advisable may be given; and should this not relieve the constipation, a dose of rhubarb and magnesia with an aromatic, or of castor oil and spirit of turpentine, will best answer the purpose.

"When during convalescence diarrhœa becomes troublesome, the rhubarb draught may be given, and afterwards a small quantity of laudanum, either by the mouth or anus as deemed most advisable.

"Great attention should be paid to the diet of the patient, not only during the existence of the disease but for some time afterwards. In the early stage the patient should not be compelled to take nourishment, as doing so would increase the irritation of the stomach. After some time, when he thinks he can retain it, small quantities of arrowroot may be given; and when the dejections lose their choleraic character, chicken broth or beef tea, with a little barley or vermicelli boiled in it (but allowed to subside) may be carefully ventured on. Solid meat should not be taken for at least five or six days from the commencement of convalescence.

"For drink, the patient generally prefers iced water to everything else; but toast water, barley water, lemon grass tea, weak mint tea, or an infusion of adru root are unobjectionable, if desired. Soda water or the ordinary effervescing draughts are often most grateful to the patient, and may be freely given. Milk and water will also be an excellent beverage, if it does not disagree with the stomach; as, besides quenching thirst, it affords no inconsiderable nourishment.

"During convalescence, nothing more in general will be required than appropriate food; but occasionally a few grains of quinine, combined with carbonate of soda or a mild bitter, may be necessary to restore the tone of the alimentary canal."

The notifications, from which the above extracts are taken, were drawn up by the medical members of the Board; viz., Deputy Inspector of Hospitals Dr. Maclean, Deputy Inspector of Fleets Dr. Wingate Johnston, Dr. Turner, the President of the College of Physicians and Surgeons of Jamaica, Dr. Magrath, senior medical officer of the General Hospital, Kingston, Dr. Morales, the Speaker of the House of Assembly, and Dr. Quier Bowerbank of Spanish Town.

APPENDIX (G.)

I have alluded, in my letter to the Governor, to the horrible condition in which the victims of this dreadful disease, tubercular leprosy, are left in some parts of the island. I can never forget the painful impression left on my feelings, from the sight of the miserable creatures I saw in the huts near Falmouth. They seemed to be regarded as pariahs or outcasts, to be driven from the fellowship of their fellow creatures, and herd only among themselves. There were between twenty and thirty in number, of both sexes and of all ages, from the grey-haired old negro resting with both hands upon a staff, without any visible or outward disease except as indicated by dirty rags around his ankles, down to the naked child of three or four years of age, seemingly healthy if it was not for a scaly eruption on the face and forehead. The father of the child was there also, with a similar cutaneous eruption. Some had lost fingers or toes; others were affected with an elephantoid enlargement of the leg, and with large spreading sores on their feet and ankles, which were swathed round with filthy rags. There was one case of cancer-like ulceration of the angle of the mouth; already, a considerable portion of the side of the face was eaten away, exposing the teeth and inside of the mouth. Among the group were two old women, and a young one of three or four and twenty years of age. She was well made, and to the eye presented a fine healthy appearance; but she had lost the fingers of both hands down to the metacarpal bones. She sought to conceal the deformity, and could with difficulty be made to reach forth her maimed hands.

The expense *to the parish* for the maintenance of these poor creatures was, I learned, about 7*s.* a-week for each.

In the parish of Trelawny there are, in different parts, numbers of persons affected with the disease, as appears from a remonstrant petition addressed by the inhabitants of the inland township of Stewart Town, and now lying before me, to the parochial authorities in March 1848. Mr. Kidd, who gave me the document, stated at the same time that since that date the numbers of lepers in the district has decidedly increased, and that most of them are living with their families. In other parishes, too, the disease is of frequent occurrence. Thus, "in some districts of Manchester," writes Dr. Brooks to me, "many miserable

" objects are to be seen with the cartilages of the nose eaten away, with ozæna, erosion of " the palate, ill-conditioned ulcers, elephantiasis. There is no attempt made to separate " these unfortunate objects from the more healthy people. The disease, thus kept up, is " not likely to be ameliorated, unless distinct lazar houses are provided."

The increasing frequency of a disease, like tubercular leprosy, is a pretty sure sign of the deteriorated physical condition of the people. It may be regarded as a sort of malignant scrofula, and is connected, no doubt, with a depraved or cachectic state of the general system. Its history is but imperfectly understood. This much, however, is quite certain, that the agencies which on the one hand favour its development, and those which on the other are most successful in checking or arresting its progress, clearly indicate the paramount importance of hygienic measures, according as these are neglected or attended to.

The circumstance, too, that consumption is becoming more common among the blacks, and the lower classes of the brown race in Jamaica, than it used to be, has a similar import. The insufficiency of their clothing, and the innutritiousness of their food, have doubtless much to do with this point. It is certainly not in the variableness of the climate, that we are to look for an explanation. So far from this being the case, there are few places in the world to which consumptive invalids might resort with greater prospect of benefit than to Jamaica. It possesses numerous advantages over Madeira; and now that the voyage can be made with such ease and comfort, in even less time than it used to take going there, it might be recommended in almost all cases where a warm equable climate is desirable. Clothed with the most varied beauty and teeming with resources of unsurpassed productiveness, it presents an ample field for pleasurable, as well as profitable, occupation; while the uniform warmth of its temperature—refreshed by the sea-breeze during the day and by the land-wind at night—acts most favourably, in many states of the system, upon the functions of the lungs and skin. I heard of numerous instances of persons who had been affected with spitting of blood, and other symptoms of incipient consumption, having recovered their health entirely, and indeed become robust and vigorous for the rest of a lengthened life. The range of the thermometer throughout the year does not usually exceed (except at great elevations) twelve or fourteen degrees of Fahrenheit's thermometer; and nearly the same is about the range during the twenty-four hours. Besides consumption, such maladies as chronic bronchitis, and old obstinate cases of rheumatism, gout, syphilis, and cutaneous disease, are often much benefited by a residence in Jamaica. The island acquired in former times a bad character, in respect of insalubrity, owing to the great mortality among Europeans from yellow fever; but even as regards this disease, its frequency and fatality were in a great measure owing to the intemperate excesses and reckless habits of the white residents, civil as well as military. Now that yellow fever is comparatively rare, the true character of the climate, and its suitableness for many forms of disease, should be made more known than it has hitherto been.

ANNO DECIMO QUINTO VICTORIÆ REGINÆ.

Jamaica, ss. CAP. XXXVI.

An Act to establish a Central Board of Health, and for other Purposes.

[26th February 1852.]

Whereas the establishment of a Central Board of Health would tend greatly to facilitate the adoption of such measures, and the speedy enactment of such laws, as would be likely, under Divine Providence, to aid the inhabitants in resisting the progress of epidemic and contagious diseases, and in the more effectual preservation of the public health: Be it therefore enacted by the Governor, Council, and Assembly of this island, and it is hereby enacted by the authority of the same, That the President of Her Majesty's Council of this island for the time being, the Speaker of the Honourable House of Assembly for the time being, the principal medical officer of Her Majesty's army in this island for the time being, the senior medical officer in charge of the naval hospital at Port Royal for the time being, the mayor of the city and parish of Kingston for the time being, the president of the college of physicians and surgeons of this island for the time being, together with such three other persons as the Governor or person administering the government of this island for the time being, by warrant under his hand and seal, may be pleased to appoint, shall be and constitute a Board for superintending the execution of this act, and shall be called "The Central Board of Health;" and the Governor or person administering the government of this island for the time being may from time to time, at his pleasure, remove all or any of the persons so appointed by him, and appoint others in their stead, whether the vacancy shall arise by the removal of the member of the Board by the Governor or from any other cause.

Preamble.

The President of the Council and certain other official persons,

together with such three other persons as the Governor may appoint,

constituted a "Central Board of Health," with power to the Governor to remove and replace the persons appointed by him.

II. And be it further enacted, That the powers and duties vested in and imposed upon the said Board by this Act may be exercised and performed by any three members thereof, two of whom shall be medical members of the Board, who shall be and form a quorum for all the purposes of the same; and in case a vacancy shall occur in the said Board at any time during the continuance of this Act, the remaining members of such Board shall and may act as if no such vacancy had occurred, and their proceedings shall not be deemed nor held void in consequence of any such vacancy.

Three members, two of whom to be medical members, to form a quorum of the Board,

and no temporary vacancy to void proceedings of the Board.

III. And be it further enacted, That it shall and may be lawful for the said Board to appoint a secretary, who shall be removable at the pleasure of the said Board, and in case of the resignation or dismissal of such secretary it shall be lawful for the said Board at any time thereafter to appoint another person in his stead: Provided, that the salary of such secretary shall not exceed eighty pounds, the same to be paid quarterly by the receiver-general out of any public money in his hands otherwise unappropriated.

Board may appoint a secretary, removable at pleasure,

at a salary not exceeding 80*l.*, to be paid by the receiver-general.

IV. And be it further enacted, That from and after the passing of this Act, or so soon after that day as conveniently may be, the members for each and every parish, the custos or senior resident magistrate, the rector, six resident magistrates next in seniority to the custos or senior magistrate, and the two churchwardens, or any five of them for and on behalf of the whole, shall meet together and be and constitute themselves into a Local Board, to be called "The Local Board of Health of the parish or city and parish of ————," and immediately after such meetings to elect and appoint four other persons to associate with and be members of such Local Board of Health.

Local Boards of Health constituted.

V. And be it further enacted, That the said Central Board may from time to time, and whenever they shall think fit, appoint and direct some proper and discreet person or persons to visit such city, parish, town, village, settlement, or other place, and to make such inquiry as he or they may deem necessary touching the sanitary condition of the inhabitants of the said city or other place as he or they may be required to visit, and to examine witnesses in prosecuting the same, and to obtain for and report to the said Central Board correct information as to the locality and state of burial grounds, supply of water, drainage, sewerage, and such other matters connected with the public health as the said Central Board shall or may instruct such proper and discreet person or persons as aforesaid to inquire into.

Central Board may direct inquiry to be made into the sanitary condition of any town or place.

VI. And be it further enacted, That in case any of the districts of this island shall appear to be threatened, or shall already be affected, with any epidemic or contagious disease during the continuance of this Act, it shall be lawful for the said Central Board of Health to make and issue such general and particular rules, byelaws, and regulations as they may deem proper and expedient for preventing the spread or mitigating the violence of such epidemic or contagious diseases, all and every of which rules, byelaws, and regulations shall be strictly kept and observed, and have the force and effect of law within such threatened or affected districts, for such period during which such districts shall be threatened or actually affected by such epidemic or contagious disease, or until the same or any of them shall be disallowed or rescinded: Provided always, that no such rules, byelaws, and regulations shall be repugnant to the laws of this island or to the provisions of this Act.

In case of epidemic or contagious disease, Central Board may issue byelaws and regulations for preventing the spread of the disease,

which byelaws and regulations shall have the force of law within affected districts.

Proviso.
Such byelaws not to be repugnant to the laws of the island.

VII. And be it further enacted, That the said Central Board shall and may, from time to time, during the continuance of this Act, repeal, alter, or amend all or any such rules, byelaws, or regulations so authorized to be made by them as aforesaid, and to make and substitute others in their stead, as to the said Board may appear expe-

Central Board may alter, annul, and amend byelaws from time to time;

but no byelaws to come into operation until approved by the Governor and Council, and published in the Gazette.

dient: Provided always, that no rules, byelaws, nor regulations made by the Central Board of Health as aforesaid shall come into operation until the same shall have been submitted to and approved of by the Governor and Council, and been duly published in the Jamaica Official Gazette, by authority.

All such byelaws must be submitted to and approved by the Governor and Council.

Proviso.

Copies of such byelaws must be laid before the two branches of the Legislature.

VIII. And be it further enacted, That all rules, byelaws, and regulations made by the Central Board of Health as aforesaid shall be submitted to the Governor and Council for their approval, who shall be at liberty to inquire into and examine such rules, byelaws, and regulations, and assent thereto, or disallow the same, or any of them, as they may think best for the public interests: Provided, that a copy of such rules, byelaws, and regulations shall be laid before the two branches of the Legislature by such Central Board of Health immediately after the promulgation of the same and the meeting of such Legislature; or if such rules, byelaws, and regulations should happen to be issued whilst the Legislature is in Session, then provided that a copy of the same shall, in the first instance, be laid before the said two branches of the Legislature.

Penalty for infringing byelaws and regulations after due publication thereof.

IX. And be it further enacted, That if after the making and issuing and due publication of such rules, byelaws, and regulations, or any of them, as herein provided for, any person or persons shall wilfully neglect and refuse to observe and obey the same, or any of them, it shall and may be lawful for any two justices of the peace of the parish or precinct, or city and parish, wherein such wilful neglect or refusal shall be complained of, upon the information on oath of any one or more credible witness or witnesses, and upon due conviction thereof, for a first offence to sentence any such person so wilfully neglecting or refusing as aforesaid to pay a fine or penalty not exceeding twenty shillings, together with the costs, and for a second offence a fine not exceeding three pounds, inclusive of costs, such fine or penalty and costs, or either of them, to be recovered by distress and sale of the offender's goods, in like manner as other fines or penalties and costs are or may be recoverable by any Act or Acts of the Legislature of this island.

Nuisances declared punishable under this act, viz.:—Swine and goats allowed to run at large in the streets of any town; pigstye near any house or street; allowing stagnant water, dung, filth, or foul animal or vegetable matter to remain on premises; contents of privies or cesspools allowed to overflow.

How such nuisances punishable.

X. And be it further enacted, That whosoever shall suffer any swine or goats to run at large in the streets, lanes, or thoroughfares of any city, town, or village, or shall keep any swine or pigstye in or near to any dwelling house, or near to any such street, lane, or thoroughfare, so as to be a nuisance to any person, or shall suffer any waste or stagnant water, or any dung, manure, filth, or other rubbish, or any foul animal or vegetable matter, to remain upon or in front of or about any part of his, her, or their premises twelve hours after written notice to him, her, or them, or any of them, from the Local Board of Health, to remove the same; and whosoever allows the contents of any water-closet, privy, or cesspool to overflow or soak therefrom, or to remain therein so long as to be offensive to the neighbourhood, shall for every such offence be liable to a penalty not exceeding forty shillings, inclusive of costs, to be recovered in a summary manner before any two justices of the peace of the parish, or city and parish, or precinct where the offence shall have been committed; and the Local Board of Health shall have full power to abate and shall abate such nuisance as they shall deem best; and the expense incurred by them in so doing shall be repaid to them by the party or parties offending, and shall be recovered in a summary manner before any two justices of the peace having proper jurisdiction.

Local Board of Health, on certificate of medical practitioner, to require unwholesome buildings to be whitewashed, cleansed and purified,

XI. And be it further enacted, That if, upon the certificate of any duly qualified medical practitioner, or any two justices of the peace, it shall appear to the Local Board of Health, after investigation, that any house, or part of any house, or any outbuilding, is in such a filthy or unwholesome condition that the health of any person is affected or endangered thereby, or that the whitewashing, cleansing, or purifying of any house, or part thereof, or of any outbuilding, would tend to prevent or check infectious or contagious disease, the Local Board of Health shall give notice in writing to the owner or occupier of such house, or part thereof, or outbuilding, to whitewash, cleanse, or purify the same; and if such owner or occupier shall fail to comply with such notice within the time specified therein, he shall be liable to a penalty not exceeding twenty shillings; and the Local Board of Health shall, if they shall think fit, cause such house, or part of a house or outbuilding, to be whitewashed, cleansed, or purified, and the expenses incurred by them in so doing shall be repaid by the owner or occupier, or in default be recoverable in a summary manner before any two justices having proper jurisdiction.

at expense of the owners.

And upon the like certificate may require trees, bush, or underwood to be cut down and cleared away from around settlements or houses,

under penalty on those who neglect so to do after notice;

or they may cause such trees to be cleared away at the expense of the owner of the premises concerned.

XII. And be it further enacted, That if, upon any such certificate of any duly qualified medical practitioner, or any two justices as aforesaid, it shall appear to any Local Board of Health that any settlement, house or houses, is or are so surrounded by trees, bush, or underwood as to be injurious to the health of the persons inhabiting such house or houses, any or either of them, or that the cutting down and clearing away of such trees, bush, or underwood would tend to prevent or check infectious or contagious disease, such Local Board shall give notice in writing to the owner or occupiers of such settlement, house or houses, to cut down and clear away all such trees, bush, or underwood; and if such owner or occupiers shall fail to comply with such notice within the time specified therein he shall be liable to a penalty not exceeding twenty shillings; and the Local Board shall, if they shall think fit, cause such trees, bush, or underwood to be cut down and cleared away, and the expenses incurred by them in so doing shall be repaid by the owner or occupier, or in default be recoverable in a summary manner before any two justices having proper jurisdiction.

XIII. And be it further enacted, That for the purposes of this Act, and during the continuance of the same, it shall and may be lawful for the said Central Board of Health to order and direct the attendance of such witnesses before them, by summons in writing under the hand of the president of the said Board for the time being, or acting president, and take such evidence from time to time touching or concerning the sanitary state and condition of this island, as well as upon all matters relating to the public health, as such Central Board may, at their discretion, think proper, and shall have power to administer, by their secretary, all lawful oaths and declarations to such witnesses.

Central Board of Health may require the attendance of witnesses, and take evidence, on oath, in all matters relating to the public health.

XIV. And be it further enacted, That the Central Board of Health shall immediately, at their first meeting, proceed to the appointment of a president of their Board.

Central Board, at their first meeting, to appoint a president.

XV. And be it further enacted, That a general meeting of the Central Board of Health shall be held at Saint Jago de la Vega on the first Monday in every month after the passing of this Act for the purpose of carrying out the provisions thereof, such general meeting to be duly advertised in the Gazette by authority for two weeks consecutively prior to the holding of each and every succeeding general meeting: Provided always, that nothing herein contained shall prevent such Central Board from calling, at their discretion, or at the discretion of any three of them, such special meetings as they may deem advisable.

A general meeting of the Central Board to be held in St. Jago de la Vega, on the first Monday in every month, to be called by advertisement in the Gazette. Proviso. Special meetings may be called by any three members of the Board.

XVI. And be it further enacted, That the Central Board of Health shall, at the end of each and every year during the continuance of this Act, draw up a report of the sanitary condition of the island, and of the state of the public health, of the number and locations of medical practitioners in the several parishes, and of the deficiencies or excess in such number, according to the requirements of the population, accompanied by such general and particular facts and circumstances, as well as by such suggestions for improvement, as the said Central Board may deem of importance, in order that such measures may be adopted and such laws enacted by the Legislature as may be deemed necessary for the wellbeing of the island and the welfare of the inhabitants thereof; and such Central Board shall and they are hereby required, on or before the tenth day of January in each and every year during the continuance of this Act, or so soon thereafter as conveniently may be, to lay before the Governor, or person exercising the functions of Governor for the time being, a duplicate of such report, so drawn up as aforesaid, and also fair copies of the same before the Council and Assembly of this island, in order that the same may be dealt with and acted upon, and the suggestions of the said Central Board carried out without any unnecessary delay.

Central Board to draw up an annual report, and to lay same on or before the 10th January in each year before the Governor, and fair copies thereof before the Council and Assembly.

XVII. And be it enacted, That this Act shall continue and be in force from the passing thereof until the thirty-first day of December one thousand eight hundred and fifty-three.

Duration of this Act to 31st December 1853.